Stripe® Maintenance Manual

Volume 1: General Maintenance

Zebra

Part # 44868L
Rev. 1

Stripe®

Maintenance Manual

Volume 1: General Maintenance

Zebra

WARRANTY INFORMATION

1. Printer Warranty

ZEBRA printers, excluding thermal printheads which are warranted separately below, are warranted against defects in material or workmanship for six (6) months from the date of original shipment by ZEBRA Technologies Corporation. This warranty does not cover normal wear and tear and shall be null and void if the equipment is modified, improperly installed or used, damaged by accident or neglect, or in the event any parts are improperly installed or replaced by the user.

Since printhead wear is part of normal operations, the original printhead and replacement printheads are covered by a limited warranty of six (6) months from the date of original shipment by ZEBRA Technologies. To qualify for this warranty, the printer must be returned to the factory or other authorized service center. Although the user is not required to purchase ZEBRA brand supplies (media and/or ribbons), to the extent it is determined that the use of other supplies (media and/or ribbons) shall have caused any defect in the thermal printhead for which a warranty claim is made, the user shall be responsible for ZEBRA Technologies' customary charges for labor and materials to repair such defect. To the extent that it is determined that failure to follow the preventive maintenance schedule and procedures listed in the Operator's Guide shall have caused any defect in the thermal printhead for which a warranty claim is made, this limited warranty shall be void.

ZEBRA TECHNOLOGIES' SOLE OBLIGATION UNDER THIS WARRANTY SHALL BE TO FURNISH PARTS AND LABOR FOR THE REPAIR OR REPLACEMENT OF PRODUCTS FOUND TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP DURING THE WARRANTY PERIOD.

As a condition of this warranty, the user must: (a) obtain a ZEBRA Return Authorization for the printer, or subassembly(s); (b) ship the printer or subassembly(s), transportation prepaid to the authorized service location; and (c) include with the Product or subassembly(s) a written description of the claimed defect. Unless ZEBRA Technologies authorizes return of the entire Product, the user shall return only the subassembly(s). Products returned shall be packaged in the original packing and shipping container or comparable container. In the event equipment is not so packaged or if shipping damage is evident, it will not be accepted for service under warranty. Surface transportation charges for the return of the printer to the customer shall be paid by ZEBRA Technologies within the 48 contiguous states and the District of Columbia. Customer<%-2> shall pay shipping costs, customs clearance, and other related charges outside the designated area. If ZEBRA Technologies determines that the Product returned to it for warranty service or replacement is not defective as herein defined, BUYER shall pay all costs of handling and transportation.

2. Supplies Warranty

ZEBRA supplies are warranted to be free from defects in materials or workmanship for a period of either the stated material shelf life or 6 months from date of shipment, whichever occurs first, provided that the BUYER has complied with ZEBRA Technologies' guidelines on storage, handling, and usage of the labeling supplies in ZEBRA printers. ZEBRA Technologies does not warrant the performance of ZEBRA labeling supplies on non-ZEBRA printers.

Any supplies product shown to the satisfaction of ZEBRA Technologies, within the time provided, to be so defective shall be replaced without charge, or ZEBRA Technologies may issue a credit in such an amount as it deems reasonable.

3. Warranty Exclusions and Conditions

The above warranties are in lieu of all other warranties, expressed or implied, oral or written, statutory or otherwise, including any ***implied warranty of merchant-ability or fitness for a particular purpose.***

ZEBRA Technologies shall not be responsible for the specific application to which any Products are applied, including but not limited to compatibility with other equipment.

All statements, technical information and recommendations relating to ZEBRA Products are based upon tests believed to be reliable but do not constitute a guarantee or warranty.

ZEBRA TECHNOLOGIES SHALL NOT, UNDER ANY CIRCUMSTANCES WHATSOEVER, BE LIABLE TO BUYER OR ANY OTHER PARTY FOR LOST PROFITS, DIMINUTION OF GOOD WILL OR ANY OTHER SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER WITH RESPECT TO ANY CLAIM HEREUNDER. IN ADDITION, ZEBRA TECHNOLOGIES' LIABILITY FOR WARRANTY CLAIMS SHALL NOT, IN ANY EVENT, EXCEED THE INVOICE PRICE OF THE PRODUCT CLAIMED DEFECTIVE, NOR SHALL ZEBRA TECHNOLOGIES BE LIABLE FOR DELAYS IN REPLACEMENT OR REPAIR OF PRODUCTS.

No salesperson, representative or agent of ZEBRA Technologies is authorized to make any guarantee, warranty, or representation in addition to the foregoing warranty.

NO WAIVER, ALTERATION, ADDITION, OR MODIFICATION OF THE FOREGOING WARRANTIES SHALL BE VALID UNLESS MADE IN WRITING AND SIGNED BY AN EXECUTIVE OFFICER OF ZEBRA TECHNOLOGIES.

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1 Introduction

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Description

The Zebra Stripe® Thermal Transfer Demand Printers are versatile label and ticket printers designed to print high-quality bar codes, various sizes and styles of alphanumeric characters, and graphics in either the thermal transfer or direct thermal mode. The Zebra Stripe printers have the flexibility to meet a wide variety of applications. Zebra Programming Language II (ZPL II®) allows the programmer to format the printed material. ZPL II is transparent to protocol converters and allows the Zebra Stripe printers to be easily integrated with most systems and host mainframes.

Scope

This manual contains the information necessary for proper maintenance of both the S-300 and S-500 models of the Zebra Stripe Thermal Transfer Demand Printer. Information presented applies to both S-300 and S-500 models, unless otherwise indicated.

Section 1 "Introduction" provides an overview of the contents of this maintenance manual.

Section 2 "The Zebra Stripe System" details the printer specifications, communication specifications, operation of the front panel controls, and functions of the indicators.

Section 3 "Printer Diagnostics" presents the diagnostic tests that are built into the Stripe printer. Examples of the labels which print for most of these diagnostic tests are illustrated.

Section 4 "Preventive Maintenance" discusses the recommended cleaning procedures for the printer and the printhead. Recommended cleaning agents and a preventive maintenance schedule are specified.

Section 5 "Corrective Maintenance" provides disassembly, replacement, and re-assembly instructions for the Stripe printer. Required tools and test equipment are specified. Adjustment procedures are provided along with the required tensions, torques, and tolerances. Instructions on AC power fuse and battery replacement are also contained in this section.

Section 6 "Troubleshooting" contains troubleshooting tables showing symptom, diagnosis, and action columns to assist the repair technician in quickly locating and repairing a printer fault. Example labels illustrate several common mechanical misalignment conditions and the best methods of adjustment.

Section 7 "Mechanical Drawings and Parts Lists" contains mechanical assembly drawings and parts lists. Parts and assemblies common to all Zebra

Stripe models are illustrated along with their maintenance part numbers. Those parts which are specific to a particular model are individually identified.

Section 8 "Appendix" contains reference material which may assist the technician when installing and maintaining the printer.

To ensure that you receive documentation updates, refer to the registration form at the front of this manual. Complete the registration form and return it to Zebra Technologies. In this way we can provide better service directly to the repair technician.

Related Manuals

"Stripe Maintenance Manual Volume 2: Circuit Descriptions and Electrical Schematics", part # 44869L, is available in case you need to repair circuit boards at the component level. However, all information necessary for replacing a circuit board is included here in Volume 1: General Maintenance.

A further description of the Zebra Stripe printer models and the ZPL II Programming Language may be found in the Zebra Stripe User's Guide, part # 44870L.

Printer front panel operations and printer calibration procedures are provided in the Stripe User's Guide (part # 44870L) and are not repeated in this maintenance manual. Refer to the user's guide for this information.

2 The Zebra Stripe® System

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This section of the manual is intended to supplement the user's guide by providing additional information to aid the service technician in troubleshooting and maintaining the printer.

Printer Specifications

Printing Considerations

Printing Specifications			Stripe S-300 Printer	Stripe S-500 Printer	Stripe S-500 Printer with Optional 6 Dots per mm Printhead
Resolution			203.2 dots per inch (8 dots per mm)		152.4 dots per inch (6 dots per mm)
Dot size (square)			0.00492" (0.125 mm)		0.00656" (0.167 mm)
Maximum print width			4.09" (104 mm)		
Print length	Minimum		0.00492" (0.125 mm)		0.00656" (0.167 mm)
	Maximum	Standard memory	6" (152 mm)	15" (381 mm)	26" (660 mm)
		With additional memory	18" (457 mm) (256k expansion)	39" (991 mm) (512k expansion)	39" (991 mm) (512k expansion)
Bar code modulus (“X”) dimension			5 mil to 55 mil		6.6 mil to 72 mil
Programmable constant printing speeds			2" (50.8 mm)	2" (50.8 mm)	
				3" (76.2 mm)	
				4" (101.6 mm)	
				5" (127.0 mm)	
				6" (152.4 mm)	
Thin film printhead with Energy Control					

Media Handling

- **Tear-Off mode:** Labels produced in strips
- **Peel-Off mode*:** Labels dispensed and peeled from the liner
- **Cutter mode*:** Labels are printed and individually cut
- **Rewind mode*:** Labels externally rewound (requires optional media rewinder - not available from Zebra Technologies Corporation)

* Options

Media Specifications

Total media width		Maximum	4.5"	115 mm
		Maximum when Cutter is installed	4.0"	101.6 mm
		Minimum	0.75"	19 mm
Label length	Maximum		See “Printing Considerations” (page 2-2)	
	Minimum	Tear-Off	0.63"	16 mm
		Peel-Off	1.00"	25.4 mm
		Cutter	1.50"	38.1 mm
Total thickness (includes liner)	Maximum (Printhead position may need to be adjusted above 0.01")		0.012"	0.304 mm
	Minimum		0.003"	0.76 mm
Core size			3.0"	76.2 mm
Maximum roll diameter			8.0"	203.2 mm
Inter-label gap	Maximum		0.157"	4 mm
	Minimum		0.079" (0.118" preferred)	2 mm (3 mm preferred)
Ticket/tag notch size			0.236" W x 0.079" L	6 mm W x 2 mm L

Ribbons

Ribbon Width Zebra recommends using ribbon at least as wide as the media you are using to protect the printhead from wear.		Minimum	1.57"	40 mm
		Maximum	4.3"	110 mm
Standard lengths	2:1 media to ribbon roll ratio		984’	300 m
	3:1 media to ribbon roll ratio		1476’	450 m
Core size	Inner diameter		1.0"	25.4 mm
	Maximum outside diameter		3.18"	80.77 mm

Zebra Programming Language II® (ZPL II®)

ASCII Data Commands provide the following features:

- Downloadable graphics (with data compression)
- Bit image data transfer and printing, including mixing of text and graphics
- Format inversion
- Mirror image printing
- Four-position field rotation (0, 90, 180, 270 degrees)
- Slew command
- Programmable quantity with print pause
- Communicates in printable ASCII characters
- Controlled via mainframe, mini, PC, Portable Data Terminal (PDT)
- Serialized fields
- In-spec OCR-A and OCR-B
- UPC/EAN [nominal 100% magnification (6 dot/mm printhead only)]

Bar Codes

The following bar codes are available on both the Stripe S-300 and S-500 unless indicated otherwise:

- Code 11
- Code 39 (Supports ratios of 2:1 to 3:1)
- Code 49 (2-dimensional bar code, standard in 14.4.2 and higher software, otherwise optional)
- Code 93
- Code 128 (Supports serialization in all subsets and UCC Case Codes)
- Codabar (Supports ratios of 2:1 to 3:1)
- Interleaved 2 of 5 (Supports ratios of 2:1 to 3:1 and supports Modulus 10 Check Digit)
- Industrial 2 of 5
- Standard 2 of 5
- LOGMARS
- Plessey
- EAN-8, EAN-13, EAN EXTENSIONS
- UPC-A, UPC-E, UPC EXTENSIONS
- MSI
- PDF417 (2-Dimensional bar code, standard in 14.4.2 and higher software, otherwise optional)
- POSTNET
- MaxiCode
- Check Digit calculation where applicable

Stripe Printer Fonts

The following fonts are standard on the S-300 and S-500 printers as indicated, and optional printer fonts are also available. Refer to the user's guide for more details.

Standard Fonts	S-300	S-500
Bit-mapped Fonts. Expandable up to 10 times, height- and width-independent.	X	X
IBM® Code page 850 International Characters and Graphic Symbols	X	X
Scalable Smooth Font (CG Triumvirate™ Bold Condensed). Expandable on a dot-by-dot basis, height- and width-independent, while maintaining smooth edges.		X

Physical Size

Height	13"	330 mm
Width	8.25"	209.6 mm
Depth	17"	431.8 mm
Weight (without options)	18 lbs.	8.2 kg

Electrical

- 110 or 220 VAC +10%/–15%, 48-62 Hz
- 5 Amps @ 110V, 3 Amps @ 220V
- UL 1950, CSA 950, IEC 950
- Complies with FCC class "A" and Canadian Doc. Class "A" rules (CISPR 22B)
- Complies with IEC 801-2, 3, and 4 for light industrial, commercial and residential

Communications Interface

- Serial RS-232 data communication; 110 - 19,200 baud; parity, data bits and XON-XOFF/DTR protocols are all switch-selectable
- Parallel Data Communication (available on the S-500 only)

Environmental Operating Range

Operating temperature	+40° to +105° F	+ 5° to +40° C
Storage temperature	- 40° to +140° F	- 40° to +60° C
Relative humidity	5% to 85% non-condensing	

Communication Specifications

The Zebra Stripe printer sends and receives ASCII (American Standard Code for Information Interchange) characters. Stripe printers can use serial data communications (S-300 and S-500) or parallel data communications (S-500 only).

The Error Detection Protocol ZPL II® feature provides virtually error-free communications. Refer to the user's guide for further information.

Serial Data Communications Overview

The Zebra Stripe S-300 and S-500 printers have a Data Terminal Equipment (DTE) Port that supports RS-232 Serial Data Communications. (The S-500 printer may instead have a Parallel Data Communications Port.) The RS-232 interface has a standard 25-pin DB25-S connector located at the rear of the printer. For all RS-232 input and output signals, the Zebra Stripe printer follows the EIA RS-232 and CCITT V.24 specifications for signal levels.

The baud rate, number of data bits, and parity are user-selectable via DIP switches at the rear of the printer. Parity only applies to data *transmitted* by the printer. The parity associated with *received* data is ignored.

Serial Data Signal Levels

Serial data signals are defined as either MARK or SPACE, while control signals are either ON or OFF. The output levels for the Zebra Stripe printers are as follows:

MARK or OFF = - 7 to - 10 Volts
SPACE or ON = +7 to +10 Volts

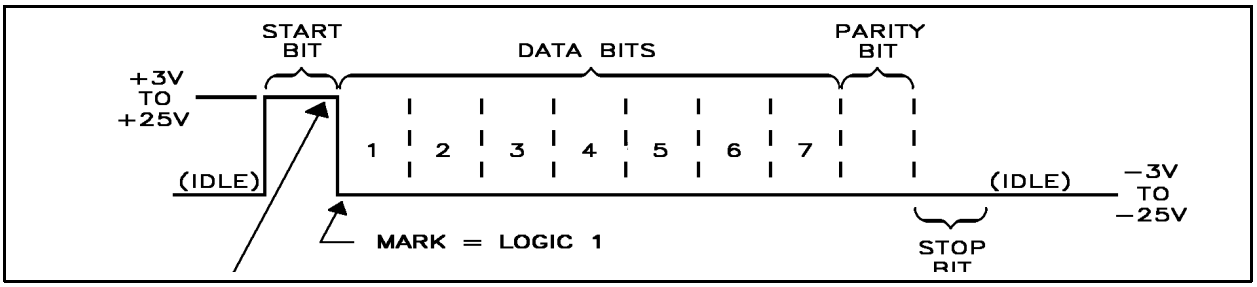

Figure 2.1 RS-232 Signal/ASCII Code Data Conditions

Serial Interface Connector Pinout and Description

A DB25-S connector is located at the rear of the Zebra Stripe printer and provides serial data communications to a host using RS-232 signaling.

The pinouts and signal descriptions for the DTE port are as follows:

Pin No.	Serial Data Port Signal Description
1	**Frame Ground**
2	**Transmit Data: TXD** is the serial data output of the Zebra Stripe printer. It is on this lead that printer status information is transmitted to the host.
3	**Receive Data: RXD** is the serial data input to the Zebra Stripe printer from the host.
4	**Request To Send: RTS** is an output from the Zebra printer. It is a constantly active output to the host computer.
6	**Data Set Ready: DSR** is an input to the Zebra Stripe printer from the host.
7	**Signal Ground:** Tied to logic ground. This lead serves as the voltage reference between the two communicating devices.
9	Reserved For Future Use.
20	**Data Terminal Ready: DTR** is an output from the Zebra Stripe printer and is the control line between the printer and the host. When the DTR control line from the Printer is in the ON condition, the host is allowed to send data to the printer. When DTR is in the OFF condition, the host is not allowed to send data. This condition occurs when the printer is configured for DTR/DSR data flow control and the communication buffer is within 512 characters of its capacity.
5, 8, 10-19, 21-25	These leads are unterminated.

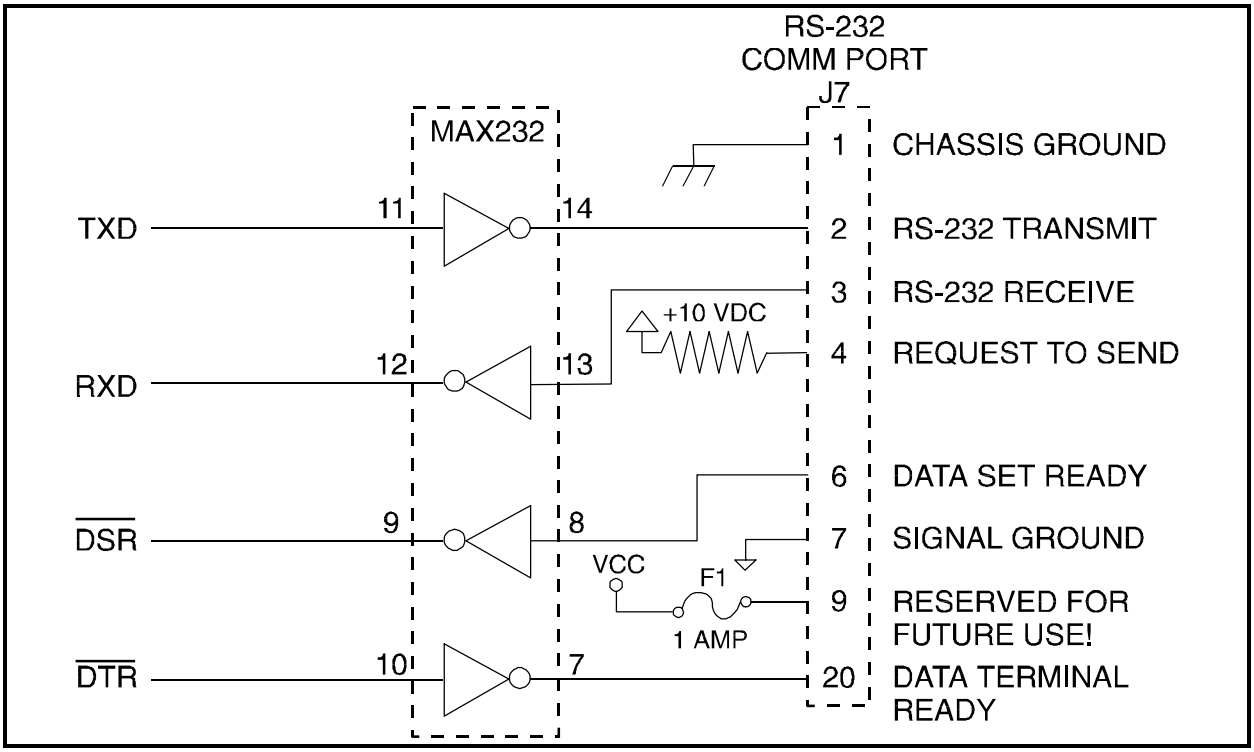

Figure 2.2 Serial DTE Port Interface

Parallel Data Communications Overview

The S-500 printer may have a Parallel Data Communications Port instead of the previously mentioned Serial Data Port. The Parallel Interface has a standard 36-pin connector located at the rear of the printer. In this data communication method, the bits of data which make up each character are sent all at one time over several wires in the cable, one bit per wire.

Parallel Data Signal Levels

Parallel Data Signals are defined as either HIGH or LOW, while Control Signals are either Active or Inactive. The distinction is due to the fact that some Control Signals are active HIGH while others are active LOW. The Voltage Levels which represent these conditions are:

Data Signal	Voltage Level
HIGH	+5 VDC
LOW	0 VDC

Parallel Interface Connector Pinout and Description

The following chart provides a description of each of the pins in the Parallel Connector. A standard Parallel Data Cable will provide the required interconnection between the host and the Stripe Printer.

Pin No.	Parallel Data Port Signal Description
1	The $\overline{\text{STROBE}}$ printer input has internal 3.3K pull-up resistors to 5V (I_{OL}= 1.5mA) and is designed to receive a signal driven open collector V_{OL} <= 0.8V. This pin is a signal from the Host Computer. Its LOW going edge will latch the data at the eight DATA inputs. Data is non-transparently latched so as to avoid hold time requirements on the DATA signals. The $\overline{\text{STROBE}}$ input is debounced to require an active width greater than 0.5 µS before data is latched.
2 - 9	DATA inputs have TTL input characteristics with internal 3.3K pullups and represent 1 TTL unit load or less. The DATA inputs are positive logic with a HIGH voltage level corresponding to a logic 1. Pin 2 through Pin 9 = D0 through D7 respectively.
10	The $\overline{\text{ACK}}$ output is a 12 microsecond active LOW pulse indicating that the printer is ready to accept data. The active LOW state precedes BUSY by 7 microseconds. $\overline{\text{ACK}}$ is driven open collector with a 3.3K ohm internal pull-up. The output sinks 7 mA to a V_{OL} <= 0.4V.
11	The BUSY output is active HIGH whenever the printer **cannot** accept data due to any normal or abnormal condition, including Buffer Overflow, Head Open, Over Temperature, and Media Error conditions. BUSY is driven open collector with a 3.3K ohm internal pull-up. The output sinks 7 mA to a V_{OL} <= 0.4V.
12	The PAPER OUT signal is active HIGH whenever the printer is out of Media or Ribbon.
13	The SELECT signal function is determined by an additional configuration option which becomes active when the port is present. In the default condition, SELECT is active HIGH whenever the parallel port is powered up and the parallel port is enabled. In the non-default condition, SELECT will go active LOW whenever the printer is printing.
18	+5 VDC Supply provides an output of +5 VDC at a maximum current rating of 50 mA. (Internal Fuse Protected)
32	The $\overline{\text{ERROR}}$ Output (Pin 15) is active LOW whenever any error condition is present. $\overline{\text{ERROR}}$ is driven open collector with a 3.0K ohm internal pull-up. The output sinks 7 mA to a V_{OL} <= 0.4V.
35	+5 VDC Pull-Up provides an output of +5 VDC through an internal 3.0K ohm Resistor.
16, 17, 19 - 30, 33	SIGNAL GROUNDS are the Logic Grounds and Returns for all Input and Output signals.
14, 15, 31, 34, 36	NOT USED - These leads should be left unconnected.

For an illustration of the Parallel Communication Data and Control Circuits, refer to the 44515 Main Logic Board Schematic in Volume 2 (part # 44869L).

Controls and Indicators

All of the printer controls and indicators are located on the front of the unit, except for the Power ON/OFF Switch, which is located on the left side of the printer.

Front Panel Controls

AC Power ON/OFF Switch

Controls application of AC Power to the printer. When Powered ON, the printer will perform a Power ON Self Test as it begins operation. Turning the printer ON while holding down certain Front Panel Keys will cause additional Printer Self Tests to occur once the Power ON Self Test is completed. The AC Power Switch should be turned OFF prior to connecting or disconnecting any cables.

PAUSE Key

The PAUSE Key stops and restarts the printing process. If the printer is idle (not printing) when the PAUSE Key is pressed, no printing can take place. If the PAUSE Key is pressed while printing is in progress, the printing stops once the current label is completed.

Pressing the PAUSE Key a second time resumes the printing process.

FEED Key

The FEED Key forces the printer to feed one blank label. If the printer is idle (not printing) or if the PAUSE function is active when the FEED Key is pressed, one blank label feeds from the printer immediately. If the printer is printing, one blank label feeds out after completion of the current batch of labels. After one blank label is fed out, pressing the FEED Key again will provide a second blank label.

CANCEL Key

The CANCEL Key is only recognized when the PAUSE function is active. Press the CANCEL Key and the current label format will be canceled. If no format is printing, the next one to be

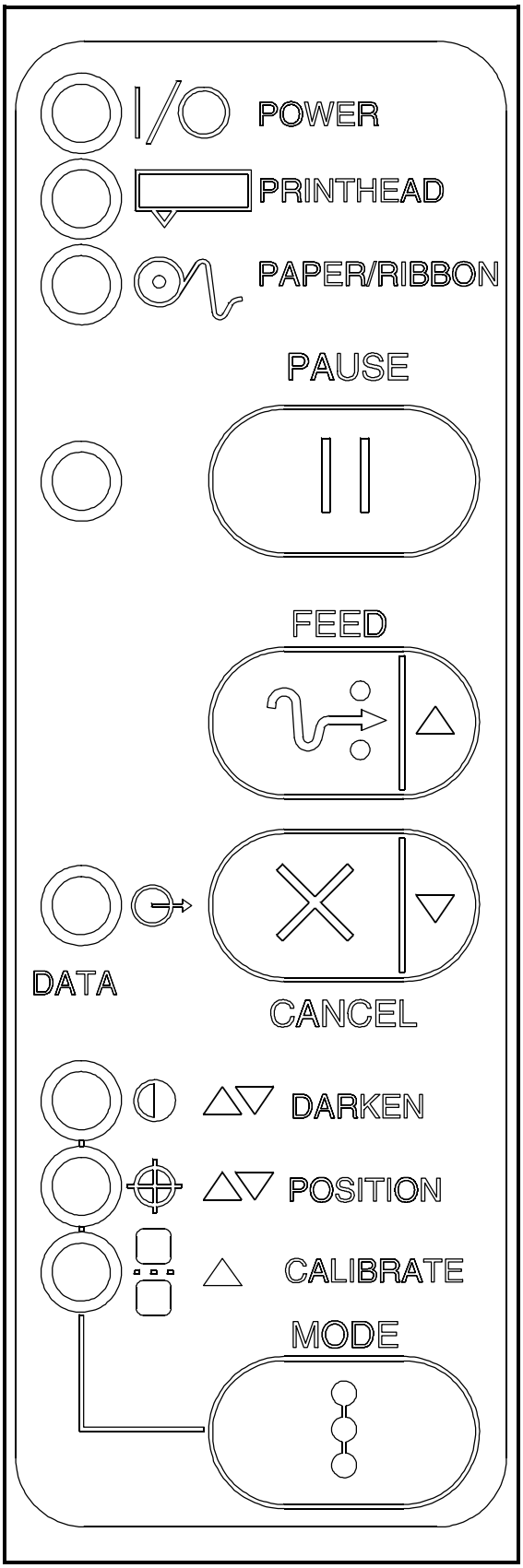

Figure 2.3 Front Panel Controls

printed will be canceled. If there are no formats in the printer, the CANCEL Key is ignored. If the CANCEL Key is pressed for an extended period of time (3 seconds), the printer will perform a "Cancel All Formats" operation.

MODE Key

The MODE Key causes the printer to enter the Configuration Mode. In this Mode, the Print Darkness, Media Tear-off Position, and Label Top Position settings can be adjusted.

The Media Calibration procedure is also activated by the MODE key.

Refer to the user's guide for details on the Configuration Mode and the Media Calibration procedures.

Front Panel Lights (LEDs)

Refer to Figure 2.3 for the location of the lights.

NOTE: If an operating condition which causes a light to be ON constantly and one which causes the same light to Flash occur at the same time, the light will Flash.

Light (LED) Name	Status	Indication
POWER	ON	Printer is ON. The AC Power ON/OFF Switch is in the ON position and the power cord is connected.
PRINTHEAD	OFF	Normal operation.
	ON	Head Over Temperature condition. Printing stops until the printhead cools down. Printing resumes automatically.
		Printhead Under Temperature condition. Printing continues.
	Flashing	Printhead Open.
PAPER/ RIBBON	OFF	Media and ribbon (if used) are properly loaded.
	ON	Paper out.
	Flashing	1. In Thermal Transfer Mode: Ribbon is out.
		2. In Direct Thermal Mode: Ribbon is in printer.
		3. Backing Rewind Spindle is full.
PAUSE	OFF	Normal operation.
	ON	Printer has stopped all printing operations.
DATA	OFF	Idle, no data being received.
	ON	Labels are printing.
	Single flash	The **CANCEL** key was pressed and a format was successfully deleted from the print queue.
	Flashing	Receiving data from host computer.
	Slow flashing	Printer sent a "stop transmitting data" (X-OFF) command to the host computer.
DARKEN	ON	Printer is in the Configuration Mode. See the Mode Key operation for more information.
POSITION	ON	
CALIBRATE	ON	

Stripe®

3 Printer Diagnostics

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The Zebra Stripe Printer features built-in test routines to aid the technician in diagnosing faults. Some of these tests are enabled by pressing a Front Panel Key while turning the Printer Power Switch ON.

Power On Self Test

A Power ON Self Test (POST) is performed each time the printer is turned ON. This test checks for proper initialization of various electronic circuits and establishes starting parameters as those stored in the printer's memory. During this test sequence, the Front Panel Lights turn ON and OFF to ensure proper operation.

At the end of this Self Test, only the POWER light will remain ON. If other lights are also lit, refer to Section 6 "Troubleshooting".

If the printer is set up for non-continuous media, one or more labels feed out up to a maximum length of one label plus three additional inches of media.

Printer Self Tests

These Self Tests produce sample printouts and provide specific information that helps determine the operating conditions for the printer.

Each Self Test is enabled by pressing a specific Front Panel Key while turning the Power Switch ON. Keep the key pressed until the Front Panel Lights turn ON.

When the Power On Self Test is complete, the selected Printer Self Test automatically starts.

Notes: When performing Self Tests, the Signal Interface Cable must be disconnected from the printer.

We recommend using full width media when performing these tests. Labels less than full width in size will lose printing on the right side. When using short labels, the printing may run onto the next label.

When performing these Self Tests while in the Peel-Off Mode, the operator must remove the labels as they become available.

When canceling a Self Test prior to its actual completion, always turn the printer Power OFF and then back ON to reset the printer.

CANCEL Key Self Test

This Self Test prints a listing of the printer's current configuration parameters stored in Configuration (EEPROM) Memory. Press the CANCEL Key while turning the AC Power Switch ON. See the printout example in Figure 3.1.

The configuration may be changed either temporarily (for specific label formats or specific ribbon and label stock), or permanently (by saving the new parameters in EEPROM Memory.) Saving new parameters occurs whenever a Printer Configuration procedure is performed. Refer to the user's guide for further details on the printer calibration procedure.

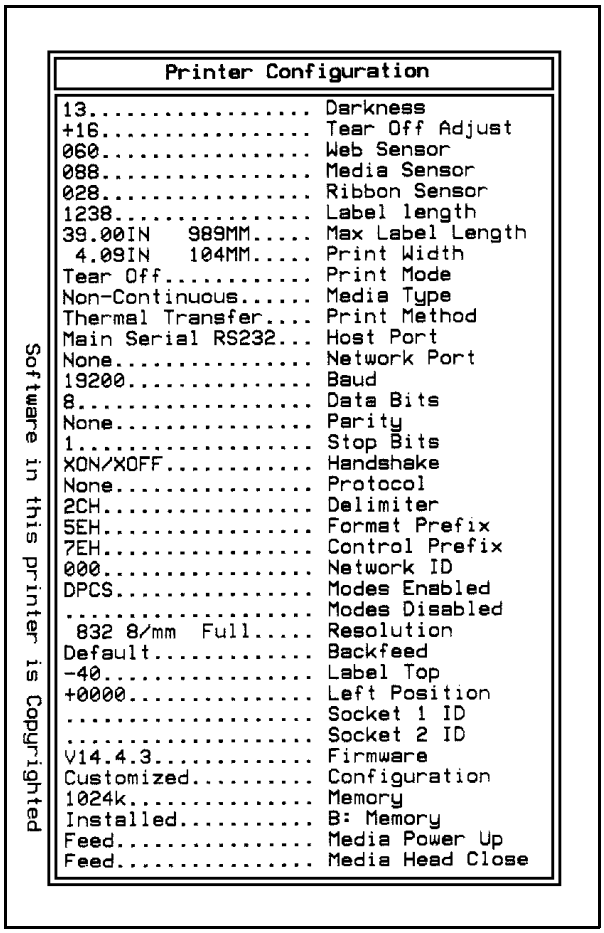

Figure 3.1 CANCEL Key Self Test Printout

PAUSE Key Self Test

S-500 Printer

This Self Test is made up of four separate features, printing at both speed “A” (2" per second) and speed “D” (6" per second).

The initial Self Test prints 15 labels at speed “A” then automatically PAUSES the printer. Each time the PAUSE Key is pressed, an additional 15 labels print.

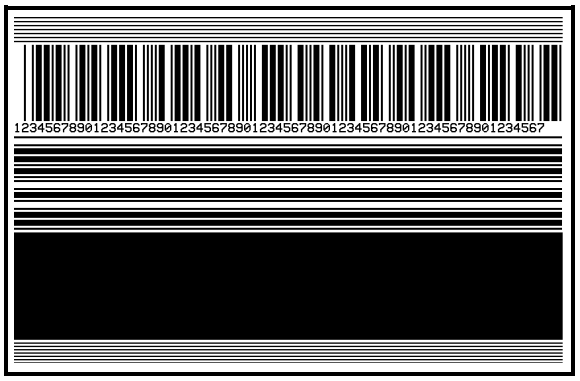

Figure 3.2 PAUSE Key Self Test Printout

While the printer is PAUSED, pressing the CANCEL Key once alters the Self Test. Now each time the PAUSE Key is pressed the printer prints 15 labels at speed “D”.

While the printer is PAUSED, pressing the CANCEL Key a second time alters the Self Test again. Now each time the PAUSE Key is pressed the printer prints 50 labels at speed “A”.

While the printer is PAUSED, pressing the CANCEL Key once alters the Self Test a third time. Now each time the PAUSE Key is pressed the printer prints 50 labels at speed “D”.

This Self Test can be used to provide the test printouts required when making adjustments to the printer’s mechanical assemblies. These test printouts can also be used during the configuration mode adjustments described in the user’s guide. See the printout example in Figure 3.2.

S-300 Printer

This Self Test is similar to the test sequence discussed above. However, only two test sequences are performed, printing at Speed “A” (2" per second) only.

FEED Key Self Test

The CANCEL Key Self Test should be performed prior to this Self Test.

Information on the “Configuration” Printout (CANCEL Key Self Test) will be used with the results of this Self Test to determine the best Darkness Setting for a specific media/ribbon combination.

The FEED Key Self Test Printout will print out at various PLUS or MINUS Darkness settings relative to the Darkness value shown on the Configuration Printout. Inspect these printouts and determine which one has the best darkness setting for the application. See the example in Figure 3.3.

The value printed on that label is added to (plus) or subtracted from (minus) the

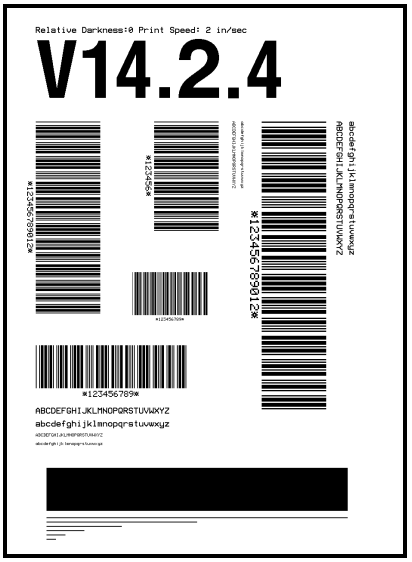

Figure 3.3 FEED Key Self Test Printout

"Darkness" value specified on the Configuration Printout.

The resulting numeric value (0 to 30) is the best darkness value for that specific Media/Ribbon combination.

The plus or minus value selected can be entered while performing a Media Darkness Adjustment. Enter the PLUS value by pressing the UP (FEED) Key, or enter the MINUS value by pressing the DOWN (CANCEL) Key the appropriate number of times. Refer to the user's guide for more information.

Optionally, the required Darkness adjustment value can be programmed into the ZPL II formats sent to the printer.

MODE Key Self Test

This Self Test places the printer in a Communications Diagnostics Mode.

Press the MODE Key while turning the AC power switch ON, then send a label format to the printer. In this mode, the printer prints the ASCII characters and their corresponding hexadecimal values for any data received from the host computer. See the example in Figure 3.4.

NOTE: Turn the Printer Power OFF to exit this Self Test.

Figure 3.4 MODE Key Self Test Printout

FEED, PAUSE, and CANCEL Keys

If these three keys are pressed at the same time and the Power is turned ON, the printer enters the Media Sensor and Ribbon Sensor Adjustment Mode. See Section 5 for these adjustments.

FEED Key and PAUSE Key

Pressing these two keys at the same time, while turning the Power ON, temporarily resets the Printer Configuration to the Factory Default values. These values will remain active until Power is turned OFF. If the Factory Default conditions are to be used on a permanent basis, save them by pressing the MODE Key four (4) times - MODE Lights cycle ON then OFF. Figure 3.5 indicates which printer function controls each of the configuration parameters.

NOTE: A Media Calibration procedure **must be performed** after Factory Default values are saved!

Parameter	Controlled By
Darkness	Front Panel Adjustment or ZPL
Tear Off Adjust	Front Panel Adjustment
Web Sensor	Front Panel Calibrate or ZPL
Media Sensor	Front Panel Calibrate or ZPL
Ribbon Sensor	Front Panel Calibrate or ZPL
Label Length	Front Panel Calibrate or ZPL
Print Mode	ZPL Controlled
Media Type	Front Panel Calibrate or ZPL
Print Method	Front Panel Calibrate or ZPL
Baud	DIP Switches
Data Bits	DIP Switches
Parity	DIP Switches
Handshake	DIP Switches
Protocol	DIP Switches
Delimiter	ZPL Controlled
Format Prefix	ZPL Controlled
Command Prefix	ZPL Controlled
Network ID	ZPL Controlled
Modes Enabled	ZPL Controlled
Modes Disabled	ZPL Controlled
Resolution	ZPL Controlled
Label Top	Front Panel Adjustment or ZPL
Socket 1 ID	EPROM
Socket 2 ID	EPROM
Firmware	Firmware Controlled
Configuration	Firmware Controlled
Memory	Functioning Memory
Battery RAM	ZPL Controlled
Media Power Up	ZPL Controlled
Media Head Close	ZPL Controlled

Figure 3.5 Configuration Parameter Controls

PAUSE Key and CANCEL Key

This self test can be used to verify proper printer operation after parts have been replaced or adjusted. When activated, the printer prints a maximum of 500 Head Test Labels. Each label backfeeds prior to printing and feeds forward to the rest position after printing. A serialized number prints on each label. Press the PAUSE Key or turn the printer power OFF to stop printing. Refer to Figure 3.6.

FEED Key and CANCEL Key

This self test is normally performed during the manufacturing process or after a major overhaul of the mechanical assemblies. This test prints seven pre-programmed formats, first at speed D (6" per second), then the same formats at speed A (2" per second). *The S-300 will only perform this test at speed "A".* The printer automatically pauses after each format. The sequence of formats is shown below. Refer to Figures 3.7 through 3.13.

FORMAT	PRINTING	TEST FUNCTION
1	20 at Speed D	Left Ribbon Wrinkle Test
2	20 at Speed D	Right Ribbon Wrinkle Test
3	20 at Speed D	Bar Code Wrinkle Test (Code-39)
4	10 at Speed D	Useable Area Test
5	10 at Speed D	Head Temperature Test
6	10 at Speed D	Upper Smear Test
7	10 at Speed D	Lower Smear Test
8	20 at Speed A	Left Ribbon Wrinkle Test
9	20 at Speed A	Right Ribbon Wrinkle Test
10	20 at Speed A	Bar Code Wrinkle Test (Code-39)
11	10 at Speed A	Useable Area Test
12	10 at Speed A	Head Temperature Test
13	10 at Speed A	Upper Smear Test
14	10 at Speed A	Lower Smear Test

Extended Printer Diagnostics

Additional Diagnostic Tests are available for Printhead Assembly Adjustments. These Diagnostics Tests are only accessible when the Data Interface Cable is disconnected from the printer and a Loopback Connector is attached in its place.

The Serial Loopback Connector is a 25-pin "D" Type (DB25P) style with pins 2 and 3 tied together and pins 6 and 20 also tied together.

The Parallel Loopback Connector is a standard 36-pin parallel connector mounted to a small circuit board. This connector is available from Zebra Technologies as part # 44680.

For each of these Diagnostic Tests, the printer will "Transmit" the test format out of the Data Interface Connector to the Loopback Connector. The Loopback Connector passes the test format back to the printer as Receive Data and the test format is printed.

PAUSE Key Loopback Test

This test demonstrates the media movement capabilities of the printer and provides a test printout to view while making print quality adjustments.

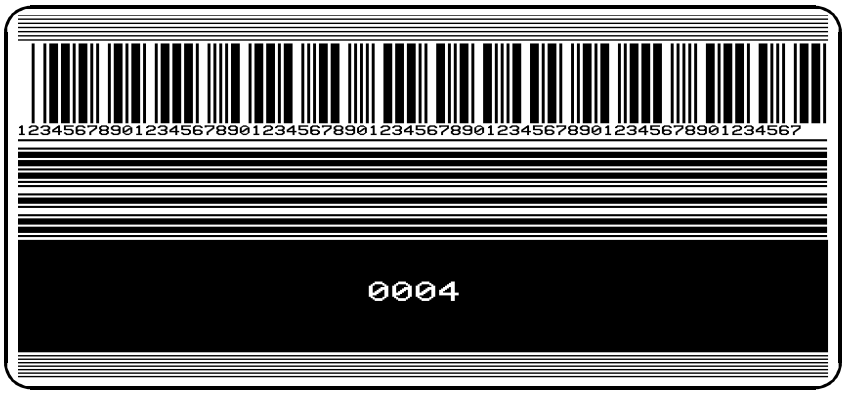

Figure 3.6 PAUSE Key Loopback Test Printout

With the Loopback Connector in place, press the PAUSE Key while turning the AC Power Switch ON.

After the Power On Self Test, the printer will print 500 Head Test labels. Each label will backfeed prior to printing and feed to the rest position after printing.

A serialized number will print on each label for comparison purposes. See printout example in Figure 3.6.

The PAUSE Key can be used to stop and restart the printing operation.

FEED Key Loopback Test

With the Loopback Connector in place, press the FEED Key while turning the AC Power Switch ON.

After the POST, the printer will begin printing a series of formats as shown in the following chart. The printer pauses at the end of each printed format. Press the PAUSE Key to begin printing the next format. Refer to the printout examples in Figures 3.7 through 3.13.

The PAUSE Key can be used to stop and restart the printing operation. When the printer is in PAUSE, the CANCEL Key can be used to move to the next format.

The S-300 will only perform this test at speed "A" (2" per second).

FORMAT	PRINTING	TEST FUNCTION
1	20 at Speed D	Left Ribbon Wrinkle
2	20 at Speed D	Right Ribbon Wrinkle
3	20 at Speed D	Bar Code Wrinkle Test (Code-39)
8	20 at Speed A	Left Ribbon Wrinkle Test
9	20 at Speed A	Right Ribbon Wrinkle Test
10	20 at Speed A	Bar Code Wrinkle Test (Code-39)
4	10 at Speed D	Useable Area
5	10 at Speed D	Head Temp Test
6	10 at Speed D	Upper Smear Test
7	10 at Speed D	Lower Smear Test
11	10 at Speed A	Useable Area Test
12	10 at Speed A	Head Temp Test Test
13	10 at Speed A	Upper Smear Test
14	10 at Speed A	Lower Smear Test

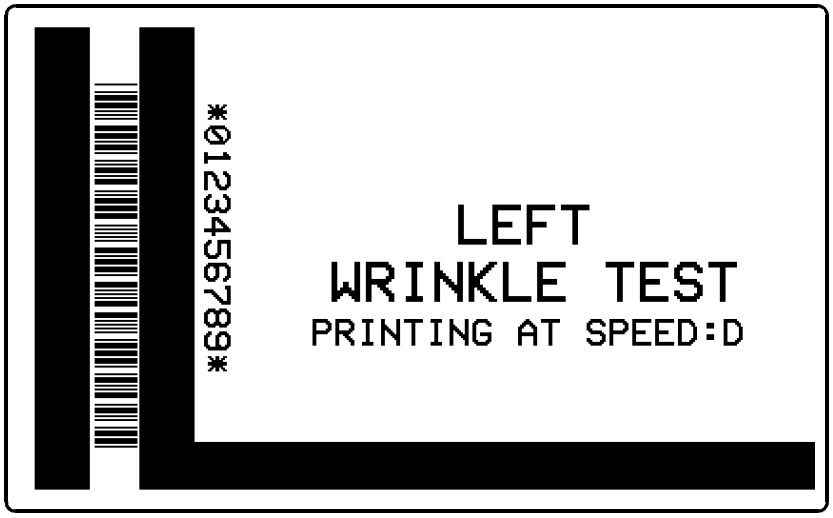

Figure 3.7 Test, Formats 1 and 8

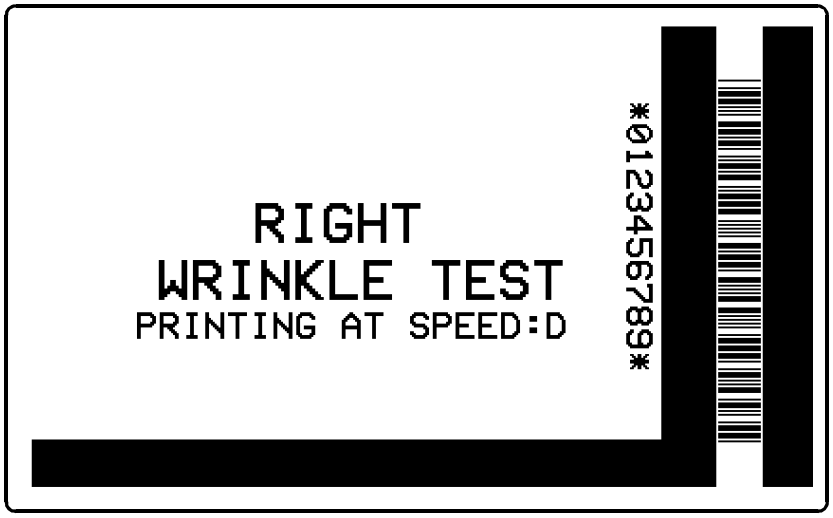

Figure 3.8 Test, Formats 2 and 9

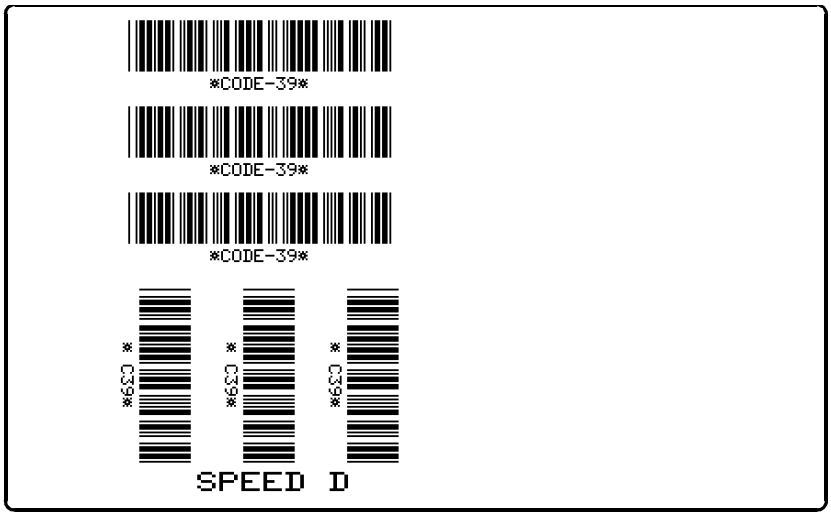

Figure 3.9 Test, Formats 3 and 10

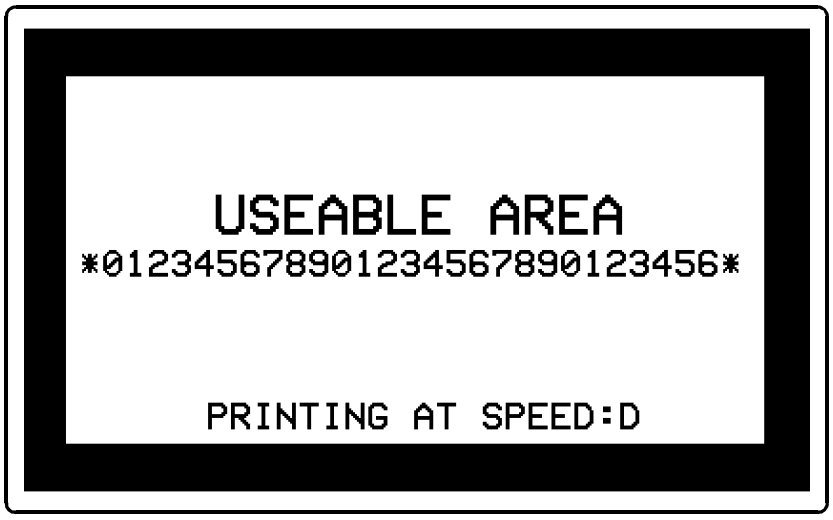

Figure 3.10 Test, Formats 4 and 11

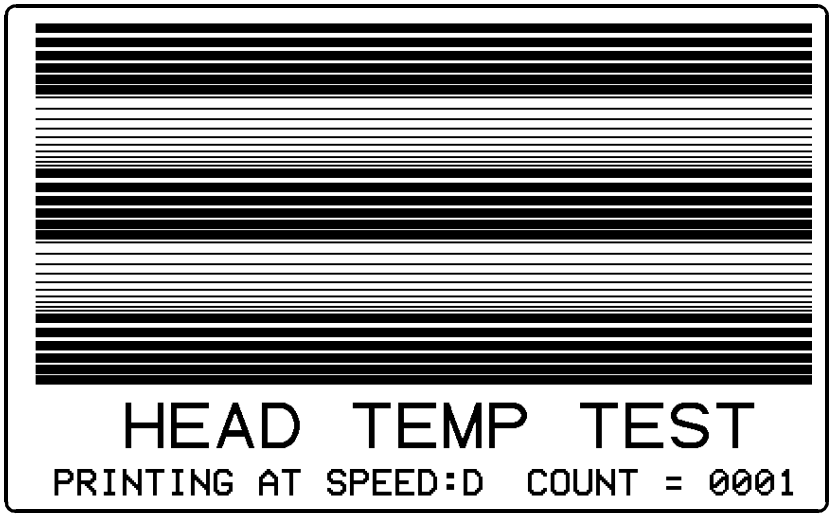

Figure 3.11 Test, Formats 5 and 12

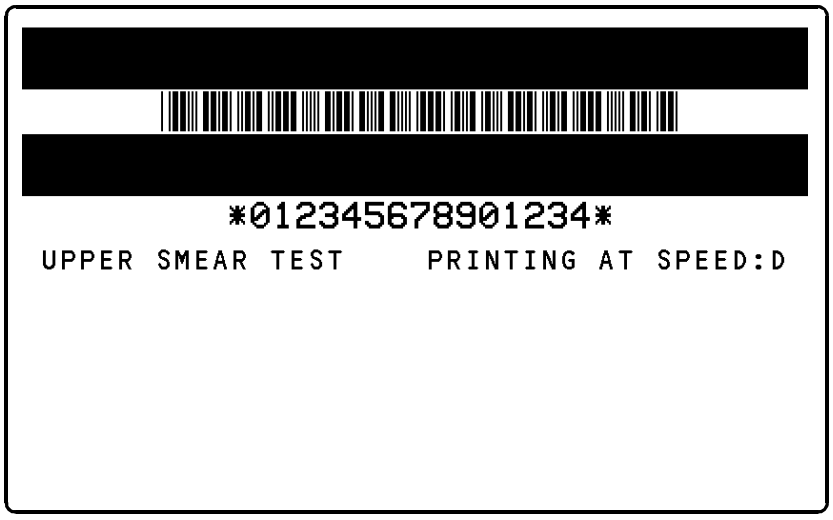

Figure 3.12 Test, Formats 6 and 13

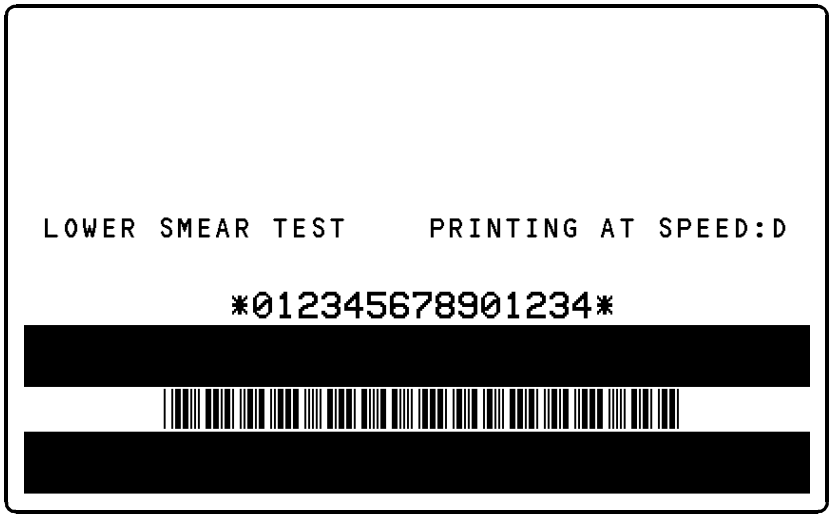

Figure 3.13 Test, Formats 7 and 14

Service Diagnostics Tests

If a jumper is installed between test points TP1 and TP2 on the main logic board when the power is turned ON, the printer will repeatedly perform the following series of tests. TP1 and TP2 are located in the upper right area of the Main Logic Board.

1. **PAUSE Key Test** - When the PAUSE Key is pressed, the Pause Light is turned ON.
2. **FEED Key Test** - When the FEED Key is pressed, the step motor and ribbon take up motors will be activated and deactivated and the DARKEN Light will turn ON.
3. **CANCEL Key Test** - When the CANCEL Key is pressed, the POSITION Light will turn ON.
4. **MODE Key Test** - When the MODE Key is pressed, the CALIBRATE Light turns ON.
5. **Head Sensor Test** - When the head is open, the PRINTHEAD Light is turned ON.
6. **Media Sensor Test** - When no media is detected, the PAPER/RIBBON Light is turned ON.
7. **Ribbon Sensor Test** - When no ribbon is detected, the PAPER/RIBBON Light Flashes.
8. **Take Label Sensor Test** - When a label is detected, the POSITION Light is turned ON.
9. **Rewind Full Test** - When the rewind spindle full sensor is activated, the CALIBRATE Light Flashes.

Stripe®

4 Preventive Maintenance

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Cleaning the Printer 4-1
Cleaning the Printhead 4-2
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Cleaning the Cutter Module....4-3
Cutter Module Cleaning Procedure....4-4
Recommended Preventive Maintenance Schedule....4-9

Maintenance functions for the Zebra Stripe Thermal Transfer Demand Printer can be divided into two basic categories.

- This section of the manual contains preventive maintenance procedures and operator care instructions. Preventive maintenance consists of a visual inspection and general cleaning of the interior and exterior of the printer and the printhead. These procedures may be performed by the operator and should be performed on a regular basis.
- Corrective maintenance provides the technician with detailed steps for resolving faults by adjustment or the replacement of components or modules. Section 5 covers the Corrective Maintenance.

Tools Required

To properly perform the required maintenance tasks, the Service Technician should be equipped with the proper tools.

Preventive Maintenance Kit includes:	**part # 01429**
Solvent (Alcohol), 4 oz. bottle	part # 01426
Applicators, bag of 100	part # 01427

WARNING: Unless indicated otherwise, turn printer power OFF before performing maintenance procedures.

Cleaning the Printer

CAUTION: Use only the cleaning agents indicated below. Zebra Technologies will not be responsible for any other fluids being used on this printer. **No lubricants are needed.**

EXTERIOR - The exterior surfaces of the Zebra Stripe printer may be cleaned as required by using a moist lint-free cloth. DO NOT use solvents or harsh cleaning agents. If the unit is excessively dirty, a mild detergent solution or desktop cleaner may be used sparingly.

INTERIOR - As required, remove any dirt/lint accumulated in the interior of the printer using a soft bristle brush and/or vacuum cleaner. It is good practice to inspect these areas with every fourth roll of media. See “Recommended Preventive Maintenance Schedule” in this section.

Cleaning the Printhead

Inconsistent print quality, such as voids in the bar code or graphics, may indicate a dirty printhead. For optimum performance, Zebra recommends performing the following cleaning procedure after every roll of ribbon.

NOTE: When cleaning the Printhead, it is not necessary to turn Printer Power OFF. If Power is turned OFF, all label formats and images, as well as any temporarily saved parameter settings, will be lost. When Power is turned back ON, it will be necessary to reload these items. (Label formats and images stored in the optional Battery Backed-Up Static RAM will not be lost if Power is turned OFF.)

Printhead Cleaning Procedure

1. Raise the Media Compartment Door and lower the Front Door.
2. Open the Printhead by moving the Printhead Release Lever to the OPEN position.
3. Remove the media and ribbon (if present) from the printhead area.
4. Moisten an applicator tip with Zebra Technologies Corporation-recommended solvent (part # 01426) and wipe the print element from end to end. See Fig. 4.1. The print element is the grayish/black strip just behind the chrome strip on the printhead). Allow a few seconds for the solvent to evaporate.
5. Apply solvent (part # 01426) to a lint-free cloth. Manually rotate the Platen Roller and clean thoroughly with solvent.
6. Brush/vacuum any accumulated paper lint and dust from within the printer, paying close attention to the rollers and media sensor areas.
7. Reload ribbon and/or media, close and latch the Printhead Release Lever, restore power if previously turned OFF, and continue printing.

CAUTION: No lubricating agents of any kind are required on this printer. Some commercially available lubricants will damage the finish if used.

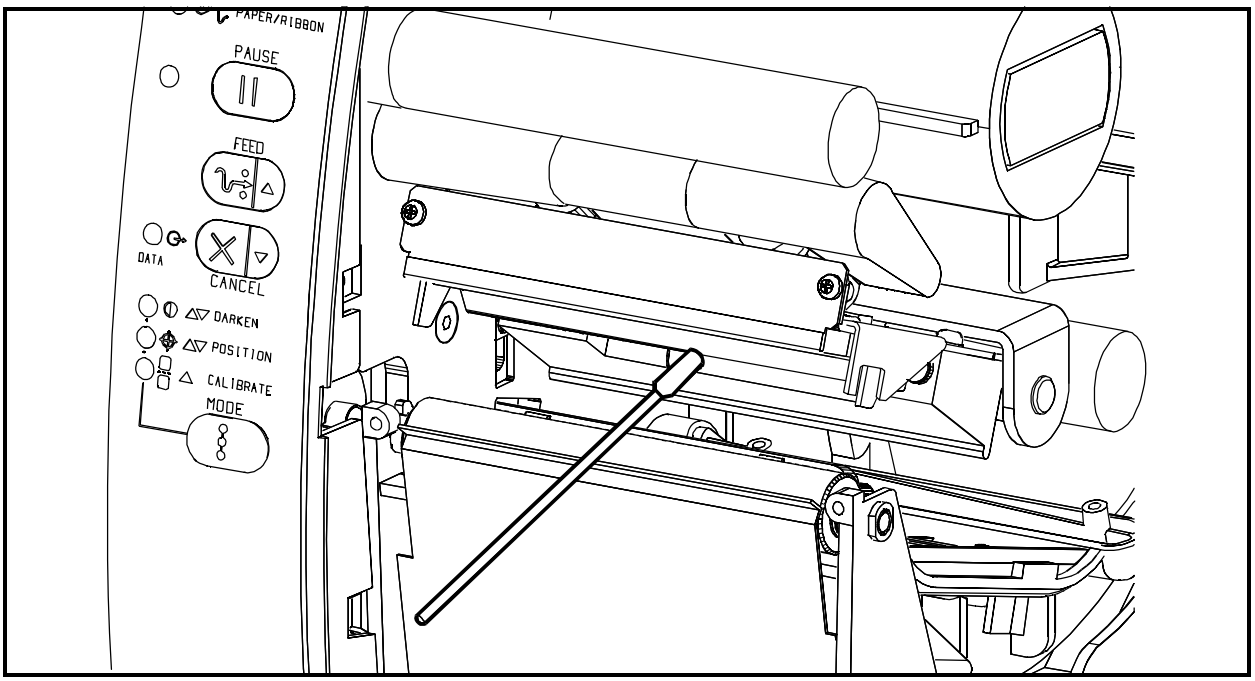

Figure 4.1 Printhead Cleaning

Cleaning the Cutter Module

(For Printers Equipped with the Optional Cutter)

The Cutter Module requires periodic cleaning to remove paper dust and gummed label residue. The procedure on the following pages should be performed by the operator according to the schedule on page 4-9. However, depending on your application and media type you may need to clean the cutter more or less frequently.

NOTE: In the figures shown, media and ribbon have been removed for clarity. It is not necessary to remove media or ribbon prior to performing the maintenance procedures described.

NOTE: Do not exchange Cutter Modules between different printers. The Cutter Module adjustments are optimized during installation to work with a particular printer, and may not perform correctly if they are placed on a different printer.

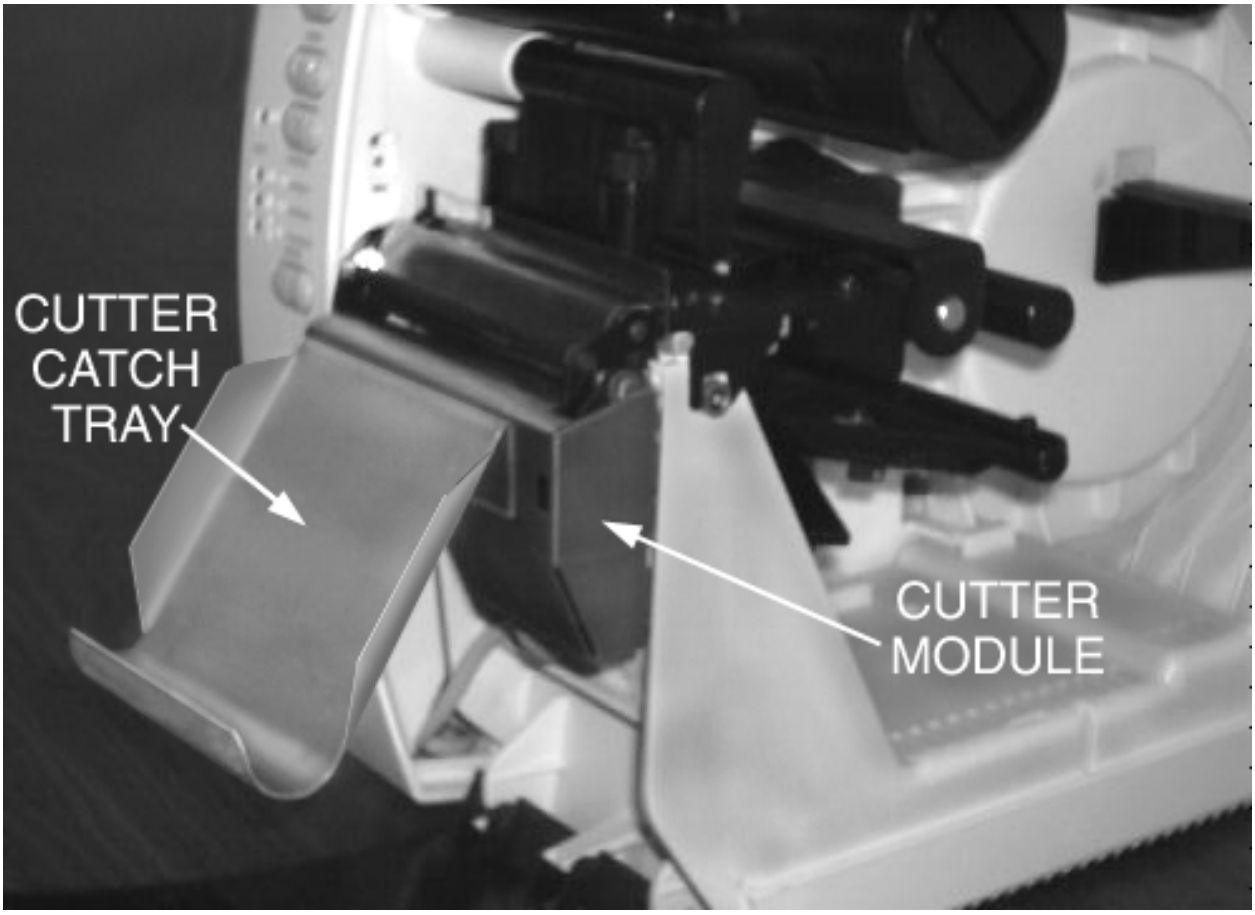

Figure 4.2 Cutter Module and Catch Tray Location

Cutter Module Cleaning Procedure

	I. Remove the Cutter Module from the printer.
1.	Turn the printer's AC power OFF.
2.	Remove the Label Catch Tray by lifting it up and away from the front of the Cutter Module.
3.	Raise the printer's Media Access Door and lower the printer's Front Door. Refer to Figure 4.2.
4.	Refer to Figure 4.3. Gently pull straight down on the Cutter Cable Connector to remove it from the mating socket on the Cutter Module.
5.	Turn the Cutter Mounting Screw (by hand or with a screwdriver) in a counter-clockwise direction until it is loose.
6.	Refer to Figure 4.4. Hold the Cutter Module as shown. Apply gentle upward pressure to the left and right ends while raising the Cutter Module up and away from the Mounting Posts. If necessary, rock the Module side-to-side to loosen it.

This procedure is continued on the next page.

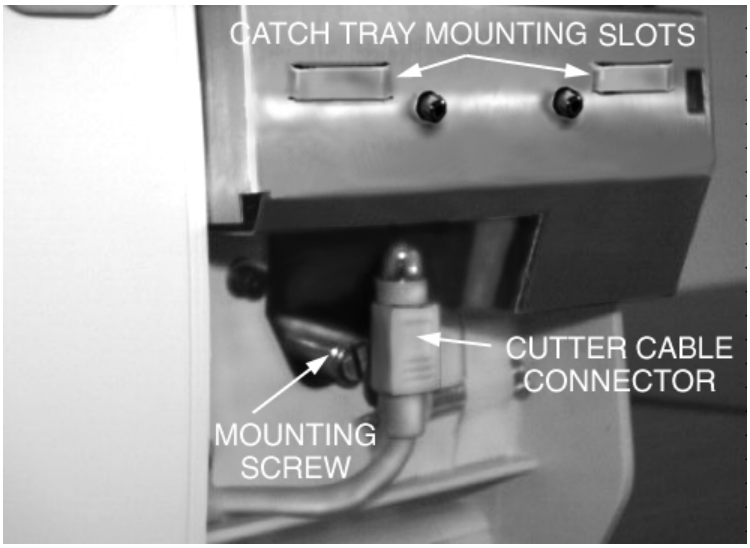

Figure 4.3 Cutter Connector and Mounting Screw

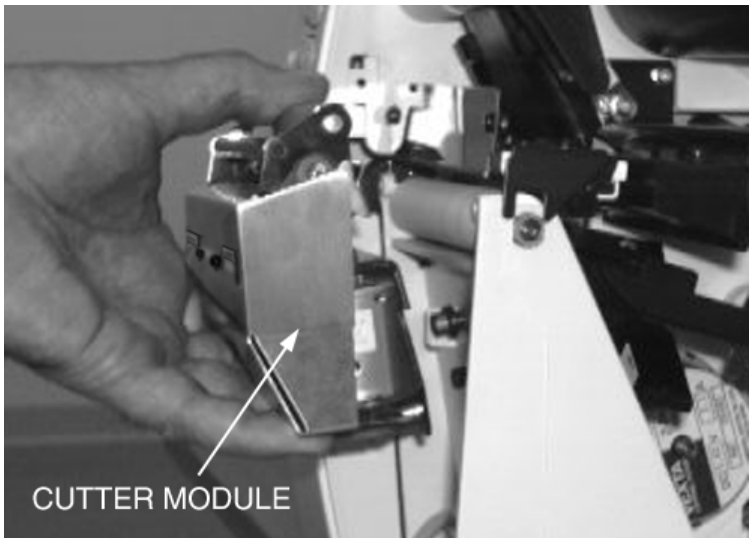

Figure 4.4 Cutter Module Removal

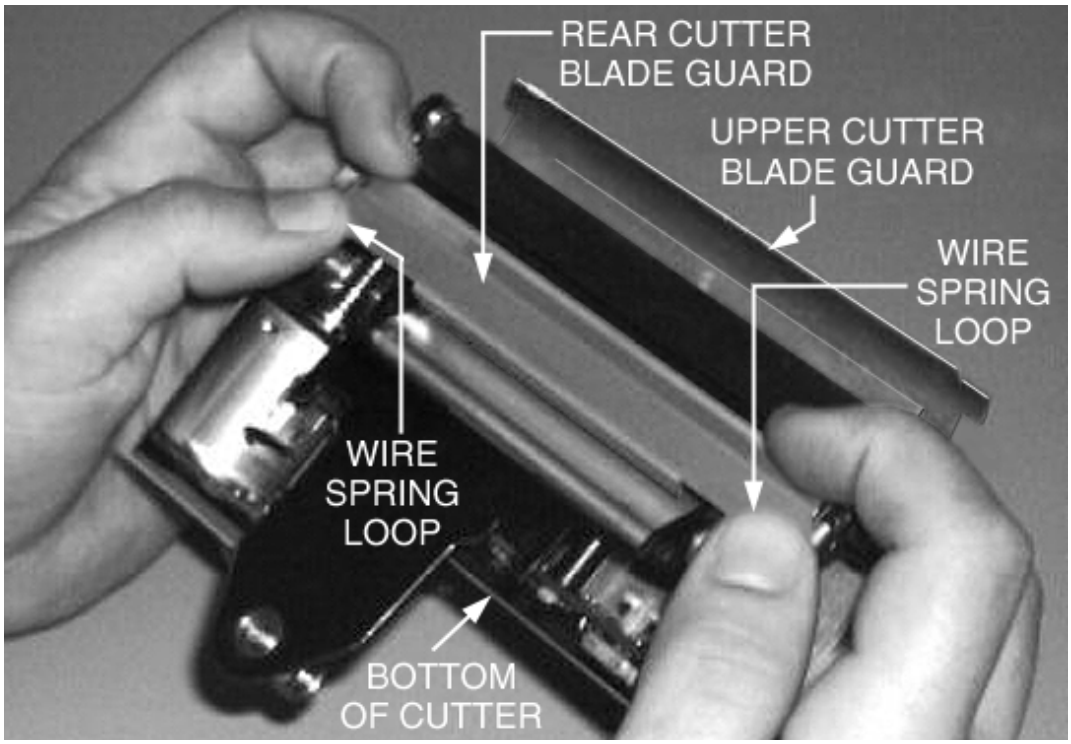

Figure 4.5 Cutter Module Disassembly

	II. Disassemble the Cutter Module.
1.	Refer to Figure 4.5. Hold the Cutter Module as illustrated. Put your thumbs on the two Wire Spring Loops and your index fingers on the top of the Rear Cutter Blade Guard. It may help to lay the Cutter Module on a table or other surface throughout this process.
2.	To remove the Rear Cutter Blade Guard, first press down simultaneously on the two Wire Spring Loops. While pressing down on the loops, press the Rear Cutter Guard back toward you and over top of the Loops. (You're trying to tuck the Loops underneath the Blade Guard in this process.)
3.	Continue pressing the Rear Cutter Guard toward you and allow the back edge of the Guard to pop up as the Guard comes free from its holders. You may now remove the Rear Cutter Guard by lifting it off of the module. ***NOTE:*** *The Wire Springs may flip up out of position during this process. Springs will be repositioned during reassembly.*
4.	Observe the ends of the Rear Cutter Blade Guard and note the small metal pins protruding toward the inside. During the Reassembly Procedure, these pins will be mounted into the corresponding mounting slots in the Cutter Side Panels.
5.	To provide complete access to the area to be cleaned, raise the Upper Cutter Blade Guard as shown in Figure 4.5.

	III. Clean the Cutter Module.
1.	Remove any label material which has adhered to the Cutter Parts and use a small brush to remove any paper dust from the Cutter Module.
2.	If you use pressure-sensitive media, use a lint-free cloth soaked in an adhesive remover to remove all gum and label residue from the Cutting Blades and Guards. If you use tag stock, use alcohol (part # 01426) to remove any dirt.

This procedure is continued on the next page.

	IV. Reassemble the Cutter Module.
1.	Refer to Figure 4.6. Position the two Wire Springs down against the Lower Cutter Blade.
2.	Place the Rear Cutter Blade Guard over the Wire Springs, perpendicular to its final position. Place your thumbs on the top (flat) part of the Guard. ***NOTE:*** *Insure that the ends of the Rear Cutter Blade Guard are positioned on the outside of the Cutter Side Panels.*
3.	See Figure 4.6. Press the Rear Cutter Blade Guard down and forward, rotating the Guard as you proceed, to lock the mounting pins into position in the Cutter Side Panel mounting slots. Slide the Guard forward until the two Wire Spring Loops pop up on the back side of the Guard. ***NOTE:*** *Insure that the Wire Springs remain positioned under the Rear Cutter Blade Guard when assembly is completed.*
4.	Lower the Upper Cutter Blade Guard back to its normal position. When reassembled, the back of the Cutter Module should look like the one shown in Figure 4.8.

This procedure is continued on page 4-8.

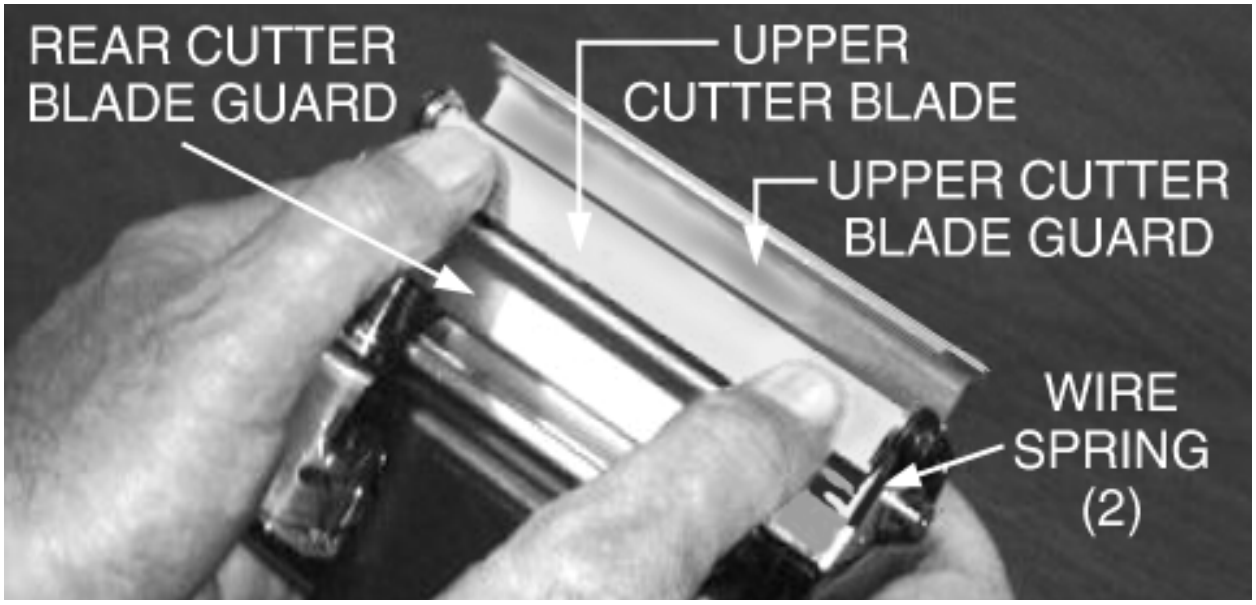

Figure 4.6 Cutter Module Reassembly

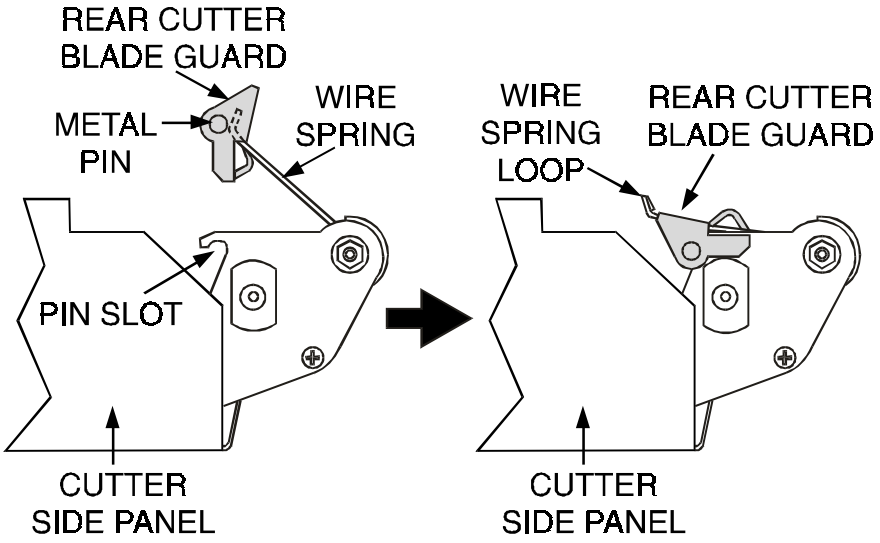

Figure 4.7 Side View of Cutter Module Reassembly

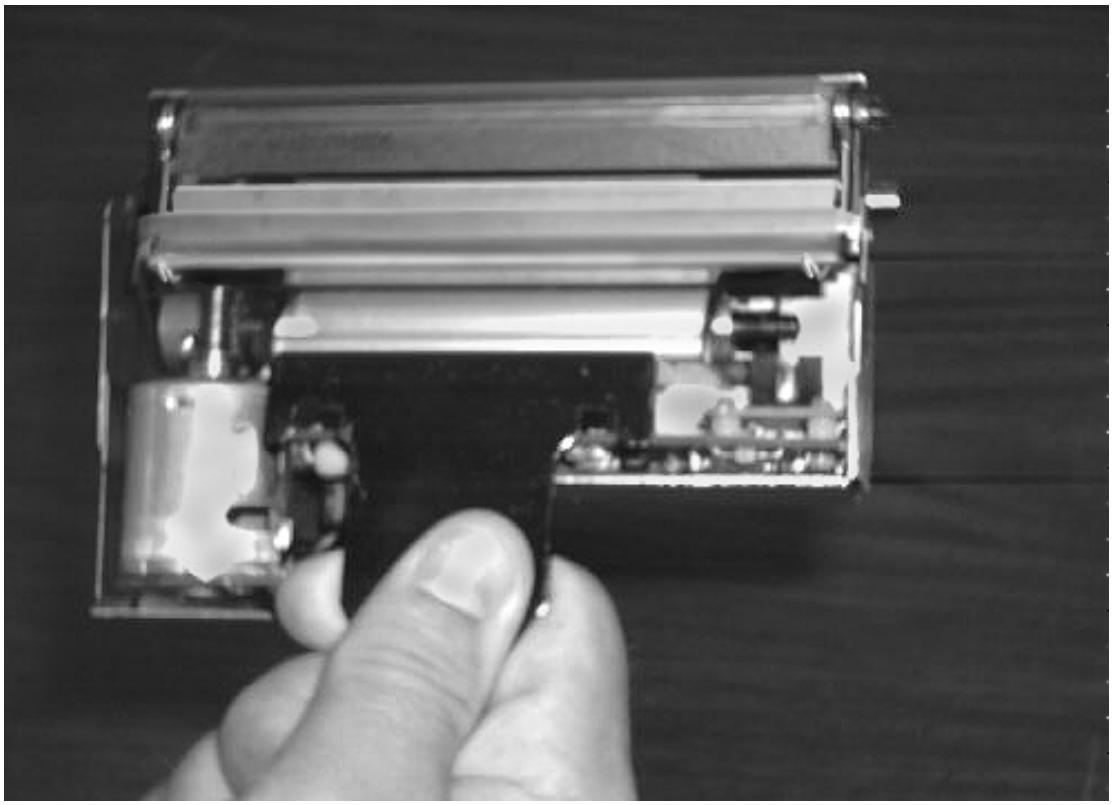

Figure 4.8 Reassembled Cutter Module

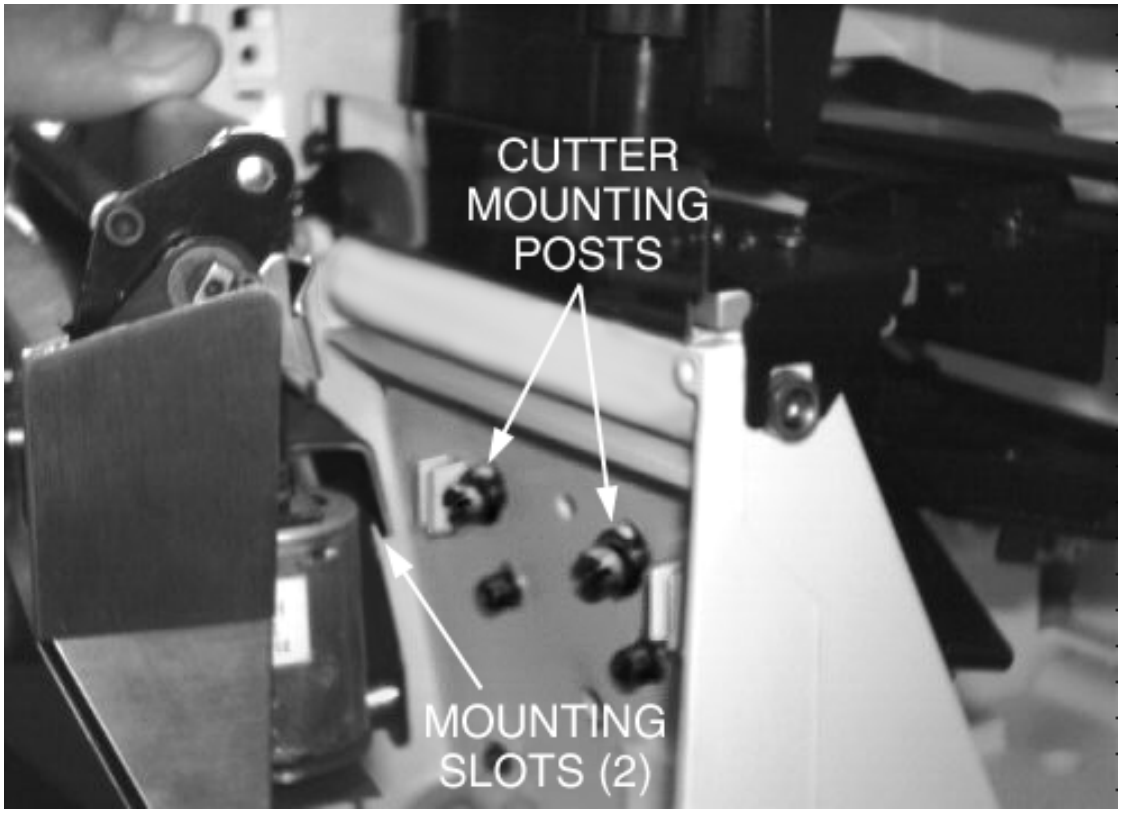

Figure 4.9 Cutter Module Reinstallation

	V. Reinstall the Cutter Module.
1.	Refer to Figure 4.9. Position the Cutter Module above the Cutter Mounting Posts. Press down on the Cutter Module until the Mounting Slots engage the Mounting Posts on the printer.
2.	Refer to Figure 4.3. Tighten the Mounting Screw in a clockwise direction to hold the Cutter Module in Position.
3.	Refer to Figure 4.3. Position the Cutter Cable Connector so the flat side of the connector faces away from the printer, then insert it up into the mating connector on the Cutter Module.
4.	Replace the Cutter Catch Tray onto the two mounting slots located on the front of the Cutter Module.

	VI. Test the Cutter Operation.
1.	If necessary, reload ribbon and label stock into the printer, then close the printer's Front Door and Media Access Door. ***NOTE:*** *When loading media, make sure the end of the label is positioned on top of the Platen Roller, then close the Printhead Latch.*
2.	When the printer is turned ON, the Cutter Module will cycle through one cutting operation and be ready to print labels.
3.	OPTIONAL: Hold in the PAUSE key while turning the printer's AC power ON. When the Power ON Self Test begins (all lights ON), release the PAUSE key. When the Power ON Self Test ends, the printer prints test labels which the Cutter Module will cut.
	End of Cutter Cleaning Procedure.

Recommended Preventive Maintenance Schedule

AREA		METHOD	INTERVAL
Printhead		Solvent/isopropyl alcohol	After every roll of media (or 500 feet of fanfold media) when printing direct thermal and after every roll of ribbon when printing in the thermal transfer mode.
Platen Roller		Solvent/isopropyl alcohol	
Media Sensor		Air blow	
Media Path		Solvent/isopropyl alcohol + cloth	
Ribbon Path		Air blow	
Cutter assembly (if used)	If using continuous pressure-sensitive media	Adhesive remover, such as "Goo-Gone"	After every roll of media or more often depending upon your application and media
	If using tagstock or label backing material only	Alcohol and air blow	After every 2 or 3 rolls of media.
Peel Bar		Solvent/isopropyl alcohol	Once per month
Label Available Sensor		Air blow	Once per six months
Ribbon Feeding		Visual	Once per 3 months
Belts		Visual, wear	6 months/500 rolls
Media Take-up Spindle		Formal preventive maintenance is not required.	
Ribbon Supply Spindle		Formal preventive maintenance is not required.	
Ribbon Take-Up Spindle		Formal preventive maintenance is not required. The ribbon take up should not be readjusted unless the printer is malfunctioning. The spindle can be adjusted to correct the problem.	

Stripe®

5 Corrective Maintenance

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When a problem occurs with the Zebra Stripe Printer, the service technician should first insure that the unit is being used properly, then exercise it to localize the fault. Once localized, refer to the appropriate replacement or adjustment procedure to correct the fault.

Tools Required

Non-Metallic Potentiometer-Adjusting Tool	Screwdriver, 1/8" or 5/16" Flat blade
Screwdriver, Phillips No. 1 (Pozi-drive preferred)	Screwdriver, Phillips No. 2 (Pozi-drive preferred) Extended reach approximately 10"
.035 inch Hex Driver	1.5 mm Hex Driver
2.5 mm Hex Driver	3.0 mm Hex Driver
5 mm Hex Socket	Torque Wrench, 0 to 20 inch-pounds
Utility Pliers	6" Ruler
0-1000 g Springscale (part # HT 343)	
0-2200 g Springscale (part # HT 344)	
Mylar Tape (30") (part # 01776) for Spindle Tension Adjustments	

Test Equipment Required

Multimeter, anti-static mat, and anti-static wrist-strap (used when removing electronic circuit boards or updating firmware).

WARNING: Unless indicated otherwise, turn printer power OFF before performing maintenance procedures.

Print Darkness Adjustment

Due to differences in types of media/ribbon and wear on thermal printhead elements, it may be necessary to adjust the Print Darkness Setting to achieve proper printing. To adjust the Print Darkness, follow the procedure below. It is not necessary to turn the printer power OFF to adjust this parameter.

CAUTION: Set the Print Darkness to the lowest setting possible for the desired print quality. Darkness set too high for a given ribbon may cause ink smearing, ribbon wrinkle and/or burning-through of the ribbon.

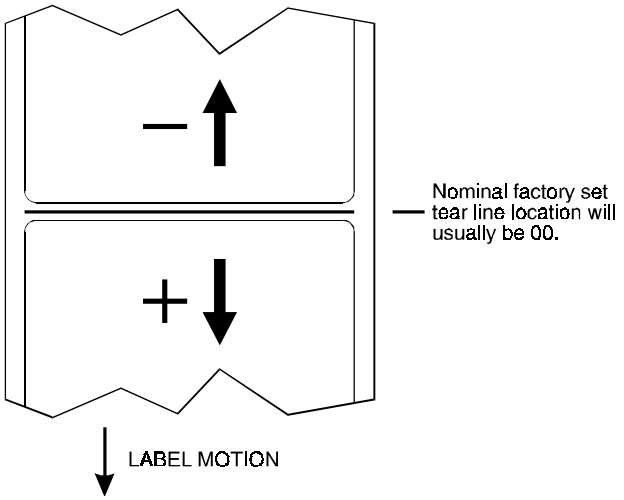
---

1. Begin printing a batch of labels. Use a Self Test Label (see Chapter 3) or one of your own label formats.
2. Pause the printing by pressing the “PAUSE” Key.
3. Press the “MODE” Key once to set the printer in “Darkness Adjust Mode.” (The DARKEN light should turn ON.)
4. Press the UP or DOWN Arrow Keys to increase or decrease the Darkness level. Each press changes the level one increment.

5. Press “PAUSE” to resume printing, and check the new setting.
6. For further adjustment, repeat steps 2 through 5. (When no further corrections are required, press the “PAUSE” Key then press the “MODE” Key three (3) times so that all MODE lights are OFF.)
7. Press “PAUSE” to resume printing, and check the new setting.

Tear-Off Position Adjustment

The stopping position of the media can be adjusted to achieve the desired Tear-Off position. If adjustment is necessary, refer to the MODE Key description in the printer’s user’s guide. The media stopping position is adjustable in increments of four dot rows at a time. The possible adjustment range is ±80 dot rows or a distance of 0.392″ (10mm) up or down from center. Powering down is not required to reset this parameter. See Figure 5.1.



This illustration shows how higher values move the label further out from the printer (moves the tear line closer to the leading edge of the next label) while lower values move the label into the printer (moves the tear line closer to the trailing edge of the printed label).

Figure 5.1 Tear-Off Position Adjustment

Media Sensor Position Adjustment

To determine the position and length of the label or ticket stock, the Media Sensor senses either the “web” between labels or a hole or notch in the print media.

When using label stock that has a web between labels, you can position the Media Sensor anywhere across the inside 50% of the web. The factory-set position should be sufficient for any width label, so little or no repositioning should be required when using media with a web.

For notched media, it may be necessary to reposition the Upper Media Sensor. See Figure 5.2 and follow the procedure below.

1. With the Printhead OPEN, look through the right side of the print mechanism and locate the Media Sensor Adjustment Lever.
2. Look through the front of the print mechanism and reposition the Adjustment Lever until the top of the lever is in line with the notch in the media. CLOSE the printhead by moving the Head Open Lever to the CLOSED position.

NOTE: Position the Media Sensor directly over the hole or notch when using tag stock. Position the Media Sensor Adjustment Lever so that rounded corners of the label are NOT detected or else tracking errors may result. For best results, position the sensor lever at one of the molded-in position indicators.

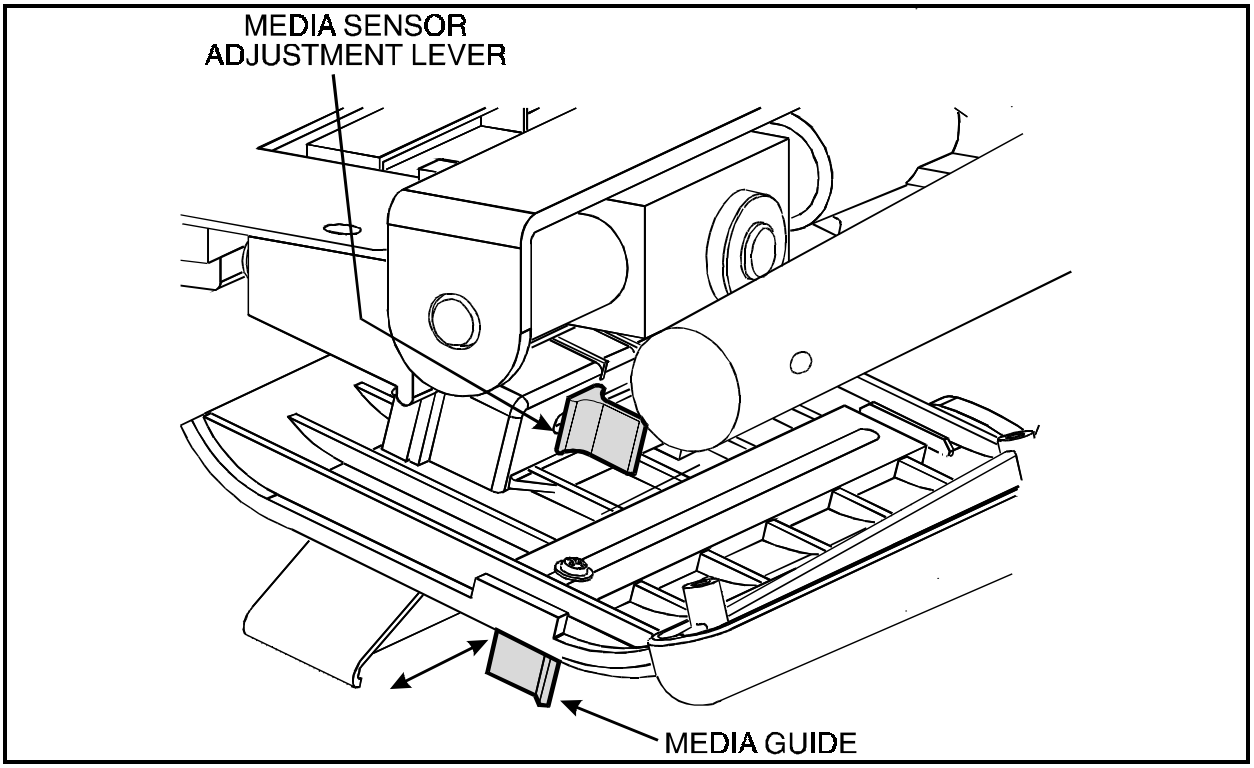


Figure 5.2 Media Sensor Position Adjustment

Media and Ribbon Sensor Sensitivity Adjustment

NOTE: Make the Media Sensor Sensitivity and Ribbon Sensor Sensitivity Adjustments at the same time.

1. Remove the Electronics Cover to allow access to the Main Logic Board.
2. **For media with backing material:** remove several labels from the media backing and load just the backing into the printer then close the printhead. **For notched tagstock:** remove media completely and calibrate on air.
3. Press the Pause, Feed, and Cancel Keys all together and hold while turning the printer ON. (Do not turn power OFF until Step 11.)
4. Insert a non-metallic potentiometer-adjusting tool through the hole labeled MEDIA in the Main Logic Board.
5. Adjust the potentiometer until the Darken light and Position light are both ON and visually look the same brightness. See Figure 5.3.
6. Remove the ribbon from the printer. Ensure the printhead is closed.
7. Insert the potentiometer-adjuster through the hole labeled RIBBON.
8. Adjust the potentiometer until the Printhead and Paper/Ribbon lights are both ON and visually look the same brightness. See Figure 5.3.
9. Replace the Electronics Cover and reload ribbon and media.
10. Press the MODE key to print Media and Ribbon Sensor Profiles for reference.
11. After the profiles are printed, cycle power OFF then ON to resume printing.

NOTE: If the printer goes into PAUSE mode and the Paper/Ribbon light comes ON, you may need to perform the Supplemental Media Sensor Sensitivity Adjustment Procedure on the next page.

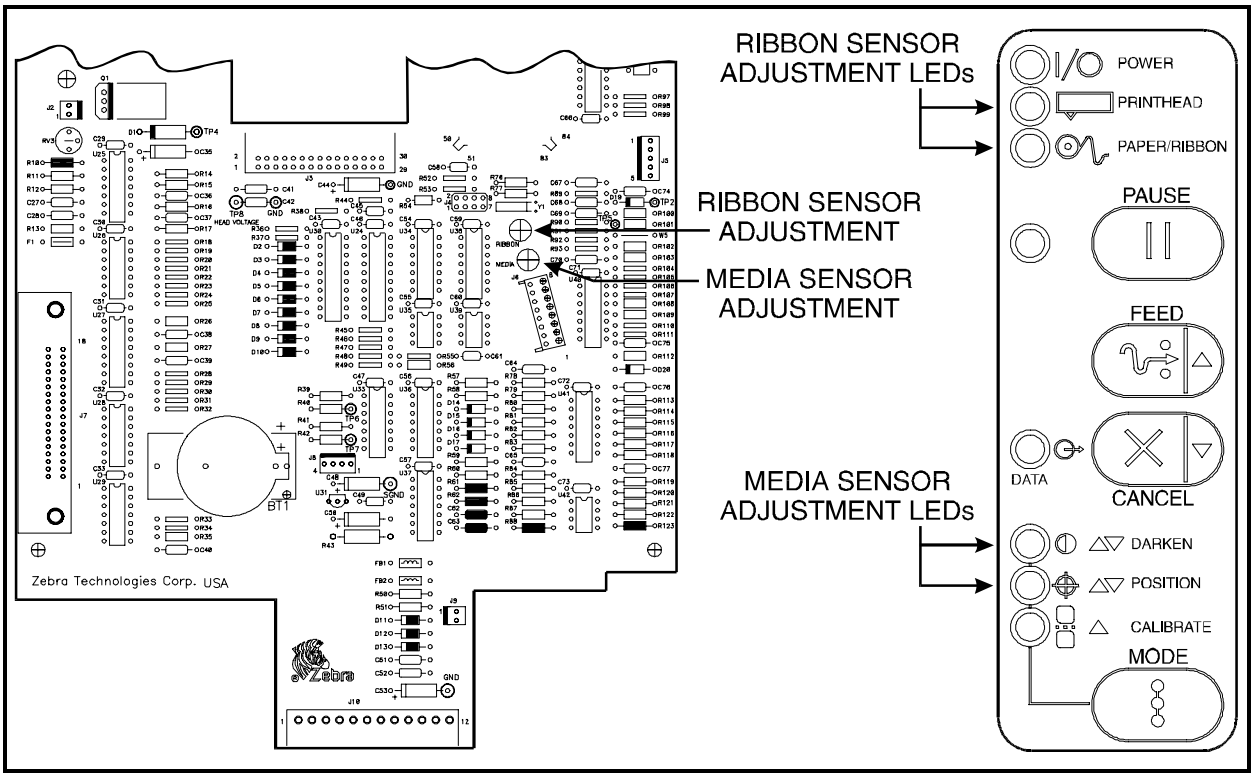


Figure 5.3 Potentiometer and LED locations

Supplemental Media Sensor Sensitivity Adjustment

Sometimes the standard procedure will not work with especially heavy media backing material. In this case, the printer fails to calibrate, goes into PAUSE mode, and the Paper/Ribbon light comes ON. If this happens, perform this supplemental procedure. Make sure that you perform the regular procedure BEFORE performing this procedure.

1. Remove the Electronics Cover to allow access to the Main Logic Board.
2. Print a Media Sensor Profile by pressing the Mode key once after the printer completes the Power On Self Test. At this point, the Media Sensor Profile will look something like the one shown in Figure 5.5.
3. As the Media Sensor Profile is printing, adjust the Media Sensor Potentiometer while viewing the profile until the peak and the background are distinctly separated (see Figure 5.5). If the peak is being printed in the interlabel gap, view the resulting peak on the used ribbon instead.
4. Replace the Electronics Cover and reload ribbon and media.
5. Cycle power OFF then ON to resume printing.

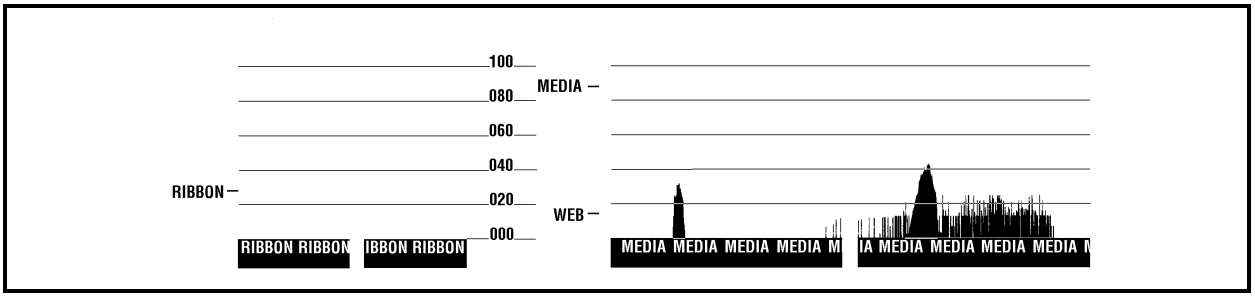


Figure 5.4 Example of a Bad Media Sensor Profile

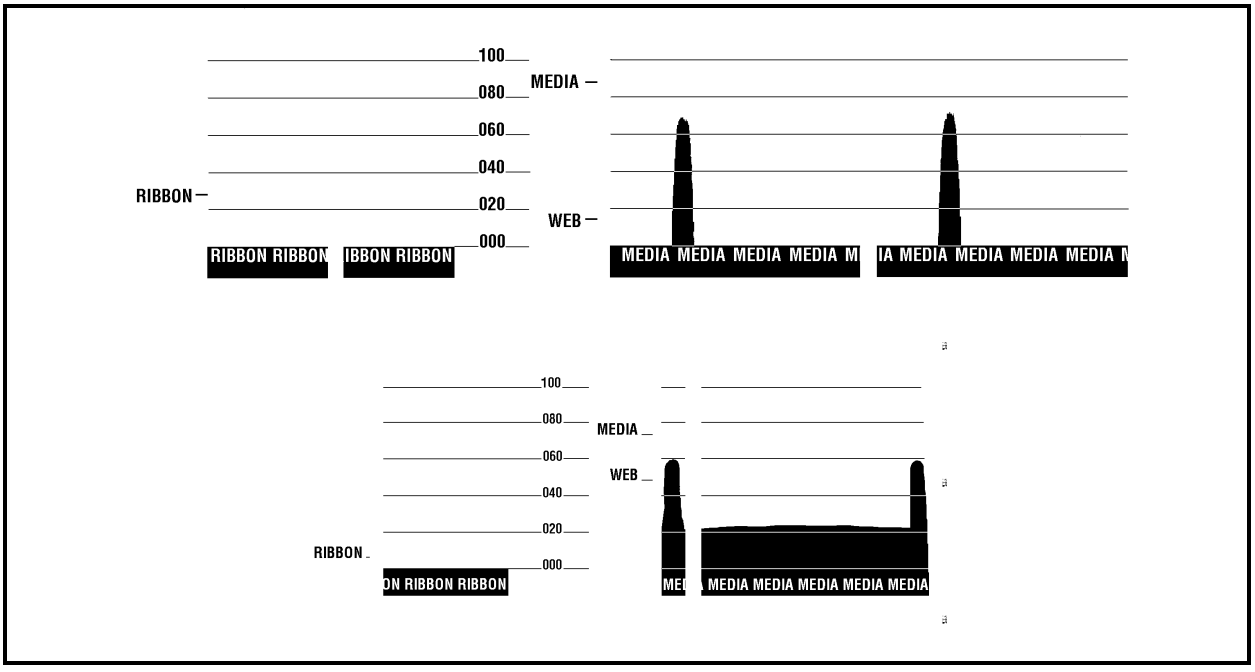


Figure 5.5 Examples of Good Media Sensor Profiles

Label Available Sensor Adjustment

The Label Available Sensor functions only when the printer is set to Peel-Off mode. This mode requires that the Peel-Off option be installed in the printer. This sensor is NOT installed on printers without this option.

See Figure 5.6 for the location of the Label Available Sensor. When the sensing beam is broken, the printer will be inhibited from printing or feeding (in Peel-Off mode only). It may, however, accept additional label formats if the buffer is not full. When the label is removed, the next label prints automatically.

There is no sensitivity adjustment for the Label Available Sensor. Sensors are attached and aligned at the factory when the Peel-Off option is installed. If you encounter problems, check the alignment of the sensor components: they should point directly at one another. Verify that the format sent contains the Peel-Off Mode command.

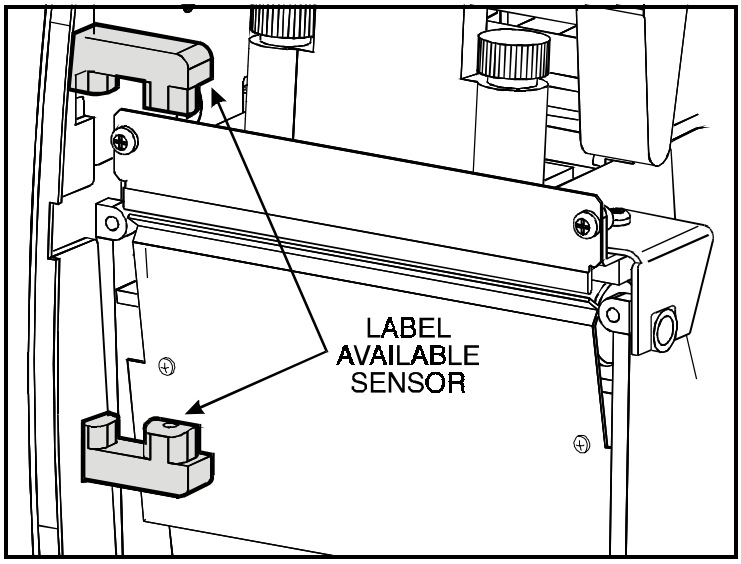


Figure 5.6 Label Available Sensor Location

Printhead Maintenance

The following topics provide the service technician with three (3) maintenance procedures dealing with the removal, replacement, and adjustment of the Printhead. Choose the appropriate set of procedures for your printhead, type A, B, or C, by comparing figures 5.8, 5.10, and 5.12 to your printer.

Printhead adjustments are required when replacing the printhead element assembly or when attempting to improve print quality and adjust parallelism. Keep in mind that the overall goal is to provide the best print quality for a given Media and Ribbon (if used).

- If your printhead assembly is type A, refer to Figures 5.7 and 5.8.
- If your printhead is type B, refer to Figures 5.9 and 5.10.
- If your printhead assembly is type C, refer to Figures 5.11 and 5.12.

Type A Printhead Removal, Replacement, and Adjustment

Type A Printhead Removal

CAUTION: The printer electronics are susceptible to static discharge. Wear an anti-static wrist strap and attach it to the printer chassis.

1. Turn the printer power OFF and remove the Power Cord.
2. Remove the media and ribbon (if used) from the printer.
3. Unlatch the Printhead.

CAUTION: The Screws in the Print Mechanism are of different lengths to provide proper assembly. Incorrect replacement could cause damage to the Printhead. Segregate these screws during disassembly to insure they are returned to their proper position.

4. Remove the two Phillips screws and remove the Strip Plate “F”. See Figure 5.7.
5. Remove the Printhead Support Bracket “D” by removing the two (2) Phillips screws.
6. Remove the Phillips screw attaching the Ground Strap “E” to the top of the Print Mechanism

NOTE: The screw attaching the Printhead to the Ground Strap “E” is longer and must be replaced in the same position.

7. Carefully remove the three (3) remaining screws holding the Printhead “A” to the Head Mounting Bracket “B”.
8. Slide the Printhead “A” forward and out of the Head Mounting Bracket.
9. Disconnect the Printhead Ribbon Cable “G” from the rear of the Printhead.

Type A Printhead Replacement

CAUTION: The Printhead Element Surface can be scratched and damaged by coming in contact with any hard or abrasive objects.

1. Note the Printhead Resistance value imprinted on the underside of the new Printhead. This value will be used later for Printhead Voltage Adjustment.
2. Connect the Printhead Cable “G” to the new replacement Printhead “A”.

CAUTION: To prevent damage, insure the Cable is securely attached.

3. Slide the new Printhead under the Head Mounting Bracket “B” and align its mounting holes with the screw holes as viewed from the top of the Mounting Bracket.
4. Carefully reinstall the six (6) mounting screws, Printhead Support Bracket “D”, and Ground Strap “E”. Insure proper screw placement. Torque to 5-6 inch-pounds.
5. Remount the Strip Plate “F” but do not tighten the mounting screws.

NOTE: Use a cotton swab moistened with Zebra-recommended Printhead Cleaning Solution (part # 01426) to clean the Printhead Element Surface before printing.

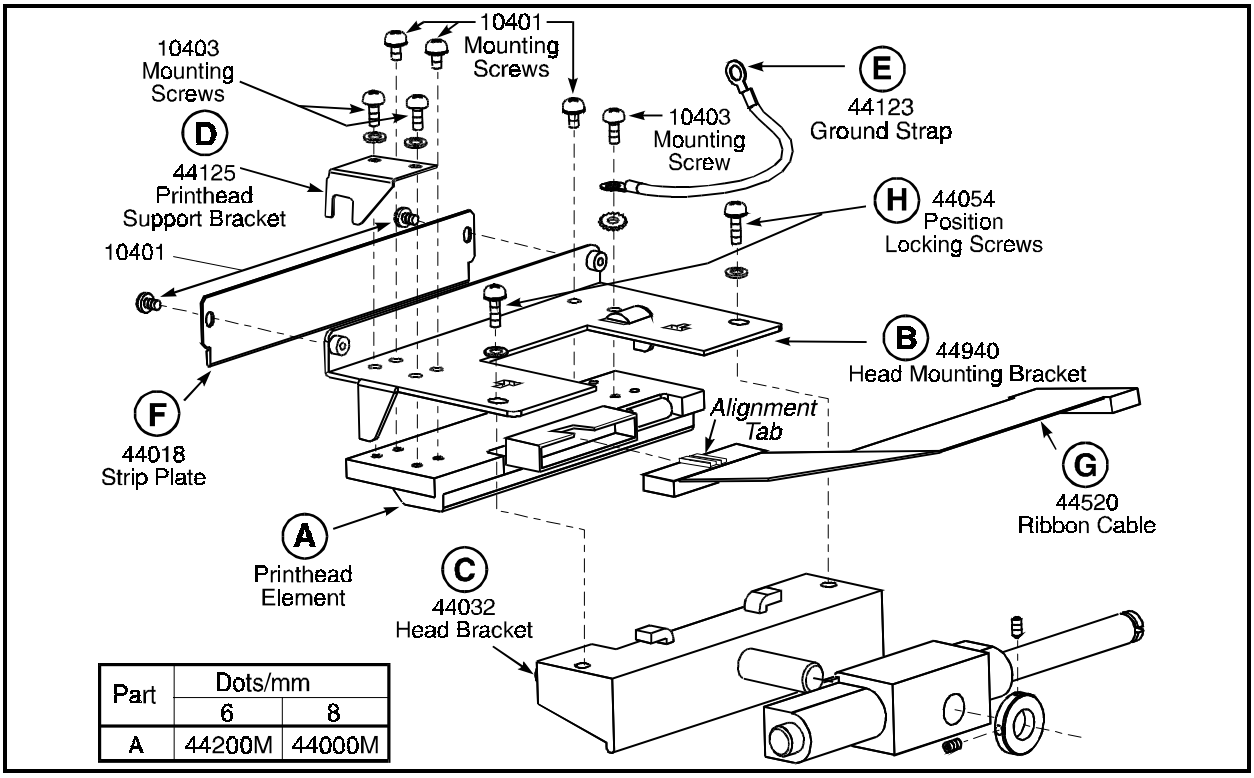


Figure 5.7 Type A Printhead Replacement

6. Reload media and ribbon.
7. Perform the Printhead Voltage Adjustment found later in this section, then return to Step 8.
8. After setting printhead voltage, run PAUSE Test labels and perform the Printhead Adjustment Procedure as needed to achieve optimum print quality.
9. Print a series of test labels to insure continued quality printing.
10. If the Cutter Option is used, you MUST perform the Cutter Voltage Adjustment Procedure.

Type A Printhead Adjustment

A #2 Phillips screwdriver and a flathead screwdriver will be required.

I. Check the initial print quality.	
1.	Open the Media Compartment Door and Front Panel on the printer.
2.	Load the recommended media and ribbon for your application and adjust the Media Sensor Position.
3.	Activate the PAUSE Key Self Test, print a few labels, and press the PAUSE key to stop printing.
4.	Observe the print quality of the test labels. If it is satisfactory, complete the process by turning the AC Power OFF. Otherwise, continue to Step II.

This procedure is continued on the next page...

	II. Adjust the print darkness.
1.	**To begin this procedure, printing on the test labels must initially be a light gray darkness.** First, press the MODE key (DARKEN light and PAUSE light turn ON) to permit darkness adjustment.
2.	Press the PAUSE key to begin printing test labels.
3.	While observing the print darkness, repeatedly press the UP (FEED) key to make the printing DARKER, or the DOWN (CANCEL) key to make the printing LIGHTER, until a light gray darkness is achieved. ***NOTE:*** *If the light gray print darkness is not achieved, it may be necessary to increase or decrease the Printhead Toggle Pressure.*
4.	Once proper print darkness is achieved, press the PAUSE key to stop printing. Continue to Step III.

This procedure is continued on the next page...

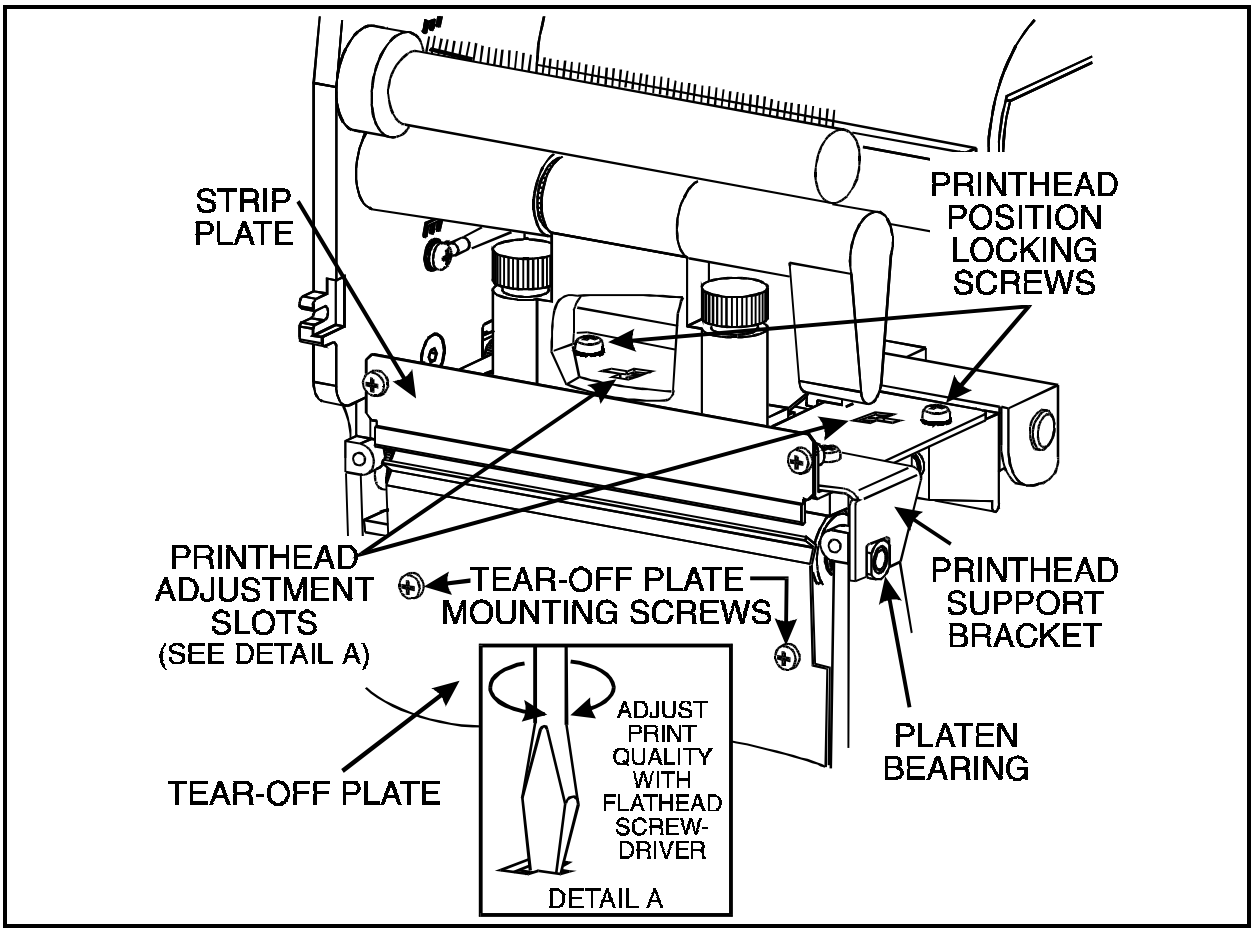
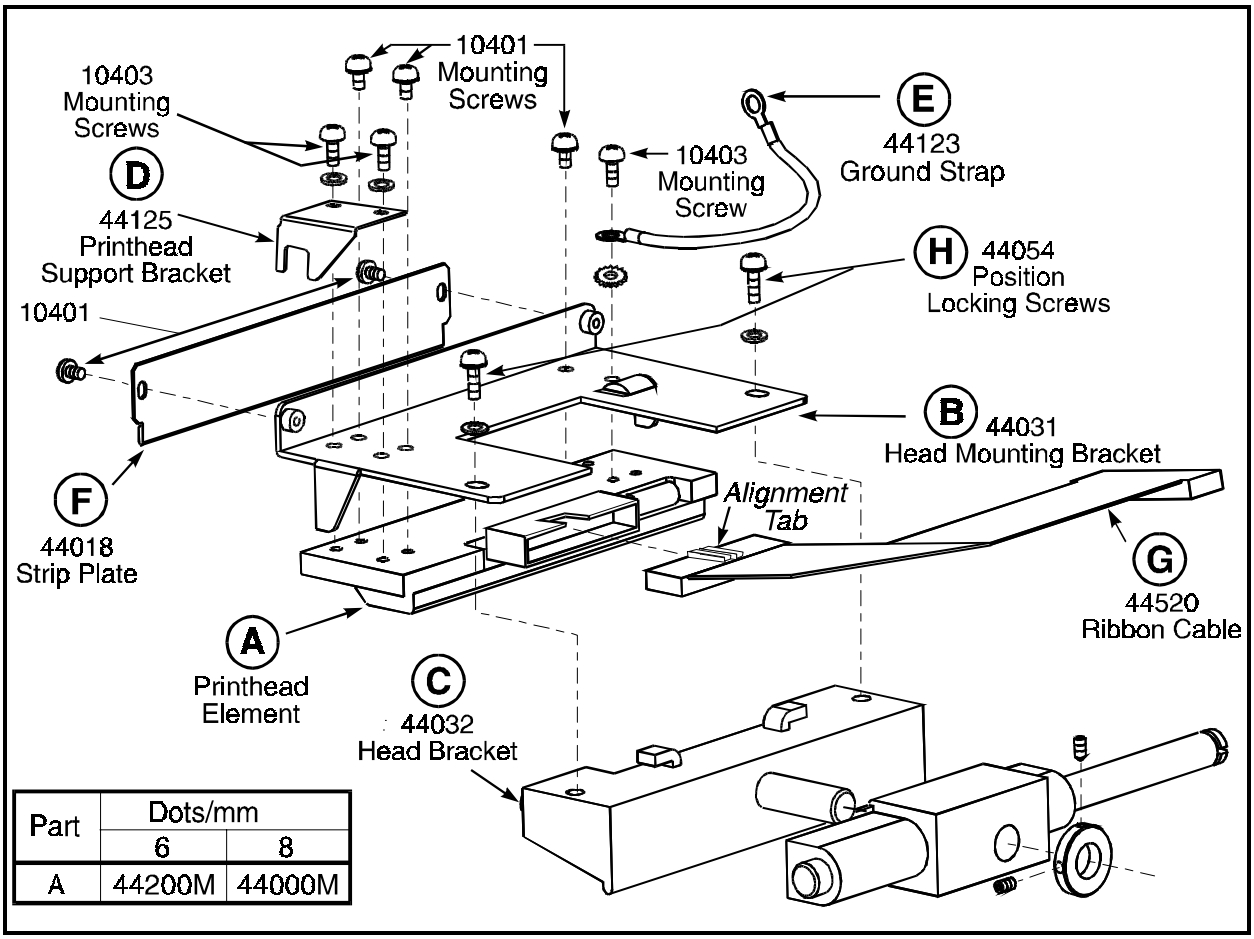


Figure 5.8 Type A Printhead Adjustment

III. Adjust the printhead position.	
1.	If the Cutter Module is used, remove it. Remove the two Phillips head mounting screws that fasten the Tear-Off Plate, then remove the Tear-Off Plate by pressing it IN then UP to disengage the mounting bracket.
2.	Use a #2 Phillips screwdriver to remove the Printhead Support Bracket and the two mounting screws.
3.	Use a #2 Phillips screwdriver to loosen (do not remove) the two screws holding the Strip Plate in position.
4.	Also use the #2 Phillips screwdriver to loosen (do not remove) the two (2) Printhead Position Locking Screws two (2) full turns. Then re-tighten finger-tight to remove looseness.
5.	Use the Head Open Lever to push the Printhead and its Mounting Bracket all the way forward.
6.	Prepare to adjust the printhead position. See Figure 5.8. Place a flathead screwdriver in one of the Printhead Adjustment Slots.
7.	Press the PAUSE key to start printing test labels.
8.	While applying forward pressure against the printhead with the Head Open Lever, adjust the Position Adjustment Slots, first one, then the other, until the darkest printing is observed on the test labels.
9.	Insure that the lines printed on the test labels are parallel to the top of the label by making minor adjustments to the left or right Slot.
10.	While still holding the Head Open Lever against the Printhead Bracket, tighten the two (2) Printhead Position Locking Screws.
11.	Re-install the Printhead Support Bracket using the two mounting screws.
12.	Press PAUSE and observe the test labels to insure consistent print quality and proper parallelism across the top of the labels. Repeat procedure if required.
13.	Once again, observe the test labels for parallelism and for consistent print darkness across the complete width of the label.
14.	If, after adjusting printhead position, one side of the label is printing lighter than the other, refer to the Toggle Pressure Adjustment section and slowly increase the Toggle Pressure on that side until the print darkness is balanced.
15.	Press the PAUSE key to stop printing. Reinstall the Tear-Off Plate and press the PAUSE key again to continue printing test labels.
16.	While observing the print darkness, repeatedly press the UP (FEED) key to make the printing DARKER until the optimum darkness is achieved. ***NOTE:*** *If the optimum print darkness cannot be achieved through the darkness adjustment, it may be necessary to increase the Printhead Toggle Pressure.* *To extend the life of your printhead, use the lowest Toggle Pressure that produces the desired print quality. Increasing Toggle Pressure to improve print quality is only recommended when the continued increase of print darkness does not provide satisfactory results.*
17.	While labels continue to print, position the Ribbon Strip Plate so the ribbon remains flat and smooth and tracks properly across the Ribbon Guide onto the Ribbon Takeup Spindle.

This procedure is continued on the next page...

18.	Tighten the two Strip Plate mounting screws and print 40 to 50 labels to insure consistent print quality.
19.	If labels are printing properly, press the PAUSE key to stop printing.
20.	Press the MODE key three (3) times (all MODE lights flash and turn OFF) and the darkness setting will be saved in memory.
21.	Complete the process by turning the AC Power OFF.



Part	Dots/mm	
	6	8
A	44200M	44000M

Figure 5.9 Type B Printhead Replacement

Type B Printhead Removal, Replacement, and Adjustment

These procedures are an alternate method to those described previously and require the use of the Printhead Adjustment Screws.

See Figure 5.9 to identify the parts when called out.

Type B Printhead Removal

CAUTION: The printer electronics are susceptible to static discharge. Wear an anti-static wrist strap and attach it to the printer chassis.

1. Turn the printer power OFF and remove the Power Cord.
2. Remove the media and ribbon (if used) from the printer.
3. Unlatch the Printhead.

CAUTION: The Screws in the Print Mechanism are of different lengths to provide proper assembly. Incorrect replacement could cause damage to the Printhead. Segregate these screws during disassembly to insure they are returned to their proper position.

4. Remove the two Phillips screws and remove the Strip Plate “F”.
5. Remove the Printhead Support Bracket “D” by removing the two (2) Phillips screws.
6. Remove the Phillips screw attaching the Ground Strap “E” to the top of the Print Mechanism

NOTE: The screw attaching the Printhead to the Ground Strap “E” is longer and must be replaced in the same position.

7. Carefully remove the three (3) remaining screws holding the Printhead “A” to the Head Mounting Bracket “B”.
8. Slide the Printhead “A” forward and out of the Head Mounting Bracket.
9. Disconnect the Printhead Ribbon Cable “G” from the rear of the Printhead.

Type B Printhead Replacement

CAUTION: The Printhead Element Surface can be scratched and damaged by coming in contact with any hard or abrasive objects.

1. Note the Printhead Resistance value imprinted on the underside of the new Printhead. This value will be used later for Printhead Voltage Adjustment.
2. Reconnect the Printhead Cable “G” to the new replacement Printhead “A”.

CAUTION: To prevent damage, insure the Cable is securely attached.

3. Slide the new Printhead into the Head Mounting Bracket “B” and align its mounting holes with the screw holes as viewed from the top of the Mounting Bracket.
4. Carefully reinstall the six (6) mounting screws, Printhead Support Bracket “D” and Ground Strap “E”. Insure proper screw placement. Torque to 5-6 inch-pounds.
5. Remount the Strip Plate “F” but do not tighten the mounting screws.

NOTE: Use a cotton swab moistened with Zebra-recommended Printhead Cleaning Solution (part # 1426) to clean the Printhead Element Surface before printing.

6. Reload media and ribbon.
7. Perform the Printhead Voltage Adjustment procedure in this section.
8. After setting printhead voltage, run PAUSE Test labels and adjust the printhead position as needed to achieve optimum print quality.
9. Adjust Head Parallelism and Print Position (per Print Quality Adjustments procedure) if required.
10. Print a series of test labels to insure continued quality printing.
11. If the Cutter Option is used, you MUST perform the Cutter Voltage Adjustment Procedure.

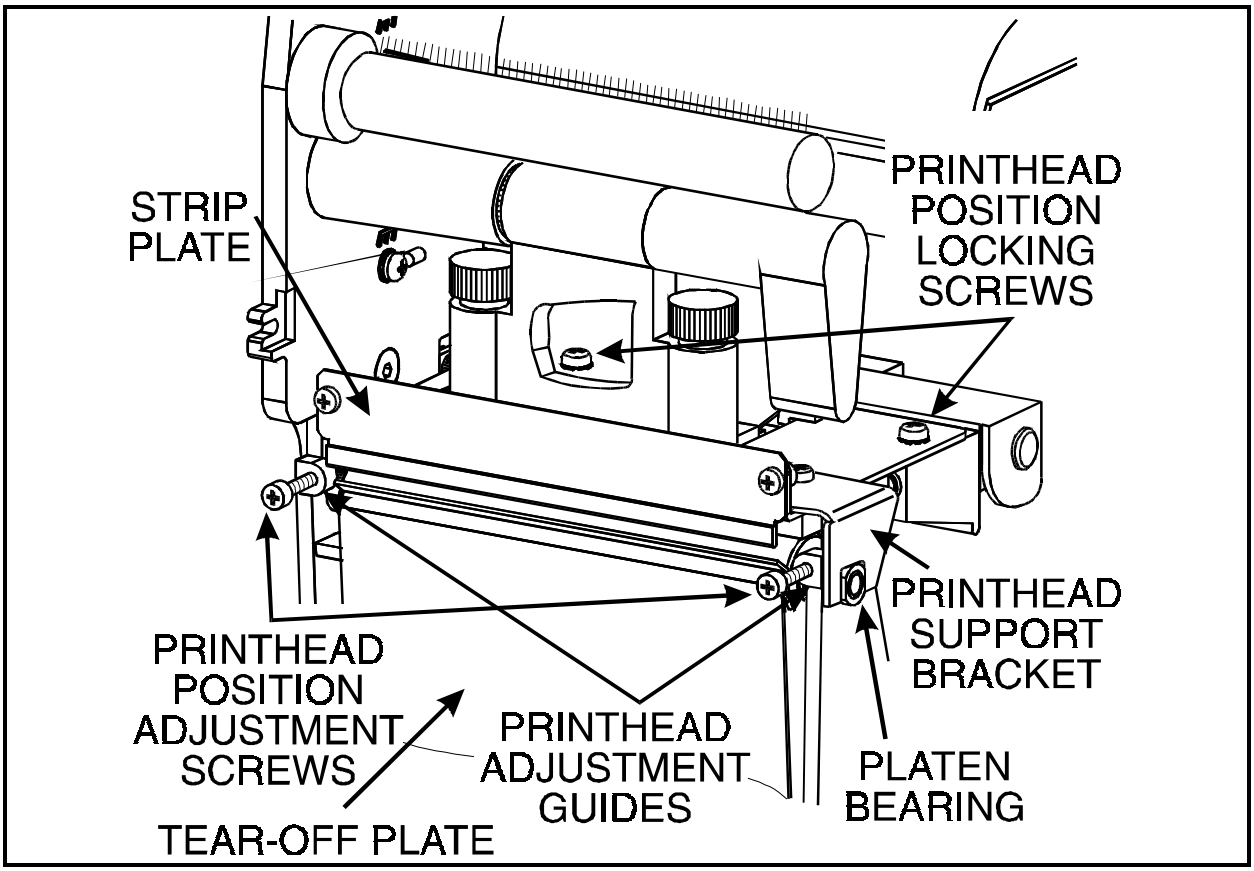


Figure 5.10 Type B Printhead Adjustment

Type B Print Quality Adjustment

In the factory, the Stripe printer is aligned and tested using full width, non-continuous media to print thermal transfer labels at Speed C (4"/sec for S-500, 2"/sec for S-300). You may need to adjust Darkness, Toggle Pressure, and Printhead Position for the particular media/ribbon combinations you are using.

When changing from one media/ribbon combination to another, only slight changes in Darkness or Toggle Pressure may be required. For these situations, refer to the topic on Toggle Pressure. However, to achieve optimum print quality for the Stripe printer, perform the adjustment procedure which follows. A #2 Phillips screwdriver will be required.

	Initial Print Quality Check
1.	Open the Media Compartment Door and Front Panel on the printer.
2.	Load the recommended Media and Ribbon for your application and adjust the Media Sensor Position.
3.	Activate the PAUSE Key Self Test (see Section 3), print a few labels and press the PAUSE Key to stop printing.
4.	Observe the print quality of the test labels. If it is satisfactory, go to Step 30 of this procedure.
	Print Darkness Adjustment Procedure
5.	For this procedure, the initial print darkness on the test labels must be a light gray. First, press the MODE Key (DARKEN light and PAUSE light turn ON) to permit darkness adjustment.
6.	Press the PAUSE Key to begin printing test labels.
7.	Observe the print darkness and repeatedly press the UP (FEED) Key or the DOWN (CANCEL) Key to make the printing DARKER or LIGHTER, until a light gray darkness is achieved. *NOTE: If the light gray print darkness is not achieved, it may be necessary to increase or decrease the Printhead Toggle Pressure.*
8.	Once proper print darkness is achieved, press the PAUSE Key to stop printing and continue to step 9.
	Printhead Position Adjustment Procedure
9.	Remove the two (2) Printhead Position Adjustment Screws from their storage positions and insert them into the Printhead Adjustment Guides.
10.	Use the #2 Phillips screwdriver to insert the screws until they extend from the back of the adjustment guides.
11.	Use the #2 Phillips screwdriver to remove the Printhead Support Bracket and the two mounting screws.
12.	Use the #2 Phillips screwdriver to loosen (do not remove) the two screws holding the Strip Plate in position.
13.	Use the #2 Phillips screwdriver to loosen (do not remove) the two (2) Printhead Position Locking Screws one (1) full turn.
14.	Use the Head Open Lever to push the Printhead and its Mounting Bracket all the way forward.
15.	Screw in the Printhead Position Adjustment Screws until they touch the adjustment tabs on the Printhead Mounting Bracket.
16.	Press the PAUSE Key to start printing test labels.

This procedure is continued on the next page...

17.	Apply gentle forward pressure with the Head Open Lever against the Printhead Assembly and adjust the Position Adjustment Screws clockwise, until the darkest printing is observed on the test labels.
18.	Insure the printed lines are parallel to the top of the test labels, by making minor adjustments to the left or right screw then press the PAUSE Key to stop printing.
19.	While still applying pressure with the Head Open Lever, tighten the two (2) Printhead Position Locking Screws at the rear of the Printhead Assembly.
20.	Install the Printhead Support Bracket over the Outboard Platen Bearing and install the two mounting screws.
21.	Press the PAUSE Key and observe the test labels for consistent print quality and proper parallelism across the top of the labels. Repeat steps 13 through 21 if necessary.
22.	Remove the adjustment screws and return them to their storage position. Once again, observe the test labels for parallelism and consistent print quality.
23.	If, after adjusting printhead position, one side of the label is printing lighter than the other, refer to the Toggle Pressure Adjustment information on the following page and slowly increase the Toggle Pressure on that side until the print darkness is balanced.
24.	Observe the print darkness, and repeatedly press the UP (FEED) Key to make the printing DARKER, until optimum darkness is achieved.
25.	*NOTE: If the optimum print darkness can not be achieved through the darkness adjustment, it may be necessary to increase the Printhead Toggle Pressure. However,* ***adjusting the Toggle Pressure to increase the print darkness is a very last resort.*** *The Printhead life can be extended by using the lowest Toggle Pressure that produces the desired print quality. Do not increase overall head pressure to increase darkness unless the continued increase of Print Darkness does not provide satisfactory results.*
26.	While labels continue to print, position the Ribbon Strip Plate so the ribbon remains flat and smooth while moving and tracks properly across the Ribbon Guide onto the Ribbon Take-Up Spindle.
27.	Tighten the two Strip Plate mounting screws and print 40 to 50 labels to insure consistent print quality.
28.	If labels are printing properly, press the PAUSE Key to stop printing.
29.	Press the MODE Key three (3) times (all MODE lights OFF) and the Darkness setting will be saved in Memory.
30.	Complete the process by turning the AC Power OFF.

Type C Printhead Removal, Replacement, and Adjustment

Type C Printhead Replacement

CAUTION: The printer electronics are susceptible to static discharge. Wear an anti-static wrist strap and attach it to the printer chassis.

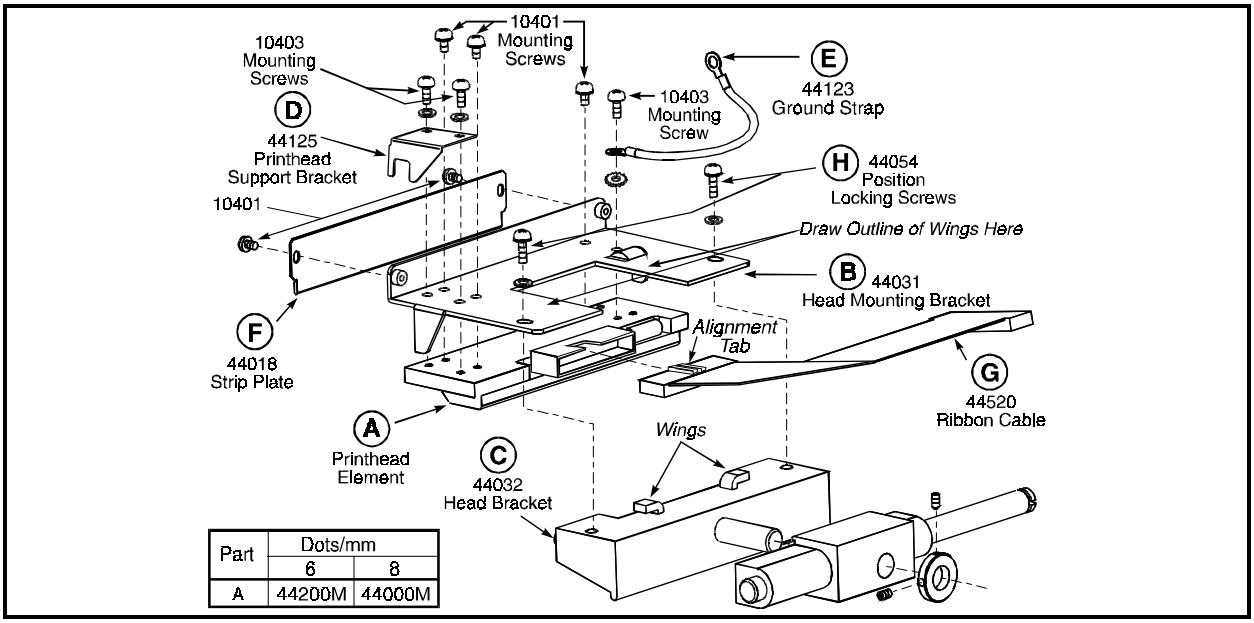
1. Turn printer power OFF and use proper static precautions before proceeding.
2. Remove the media and the ribbon if installed.
3. Close and latch the Printhead then use a pencil to outline the wings of the Head Bracket “C” on the top surface of the Head Mounting Bracket “B”. See Figure 5.11. These marks will be used to identify the original position when reinstalling the Head Mounting Bracket “B”.

CAUTION: The Screws in the Print Mechanism are of different lengths. Incorrect replacement could damage the Printhead. Segregate the screws during disassembly to insure they are returned to their proper position.

4. Remove the Strip Plate “F” and set aside.
5. Remove the screw and star washer which secures the Ground Strap “E” to the Head Mounting Bracket “B”. **NOTE:** This screw is longer and must be used in the same position.
6. Remove the two Position Locking Screws “H” and washers from the Head Mounting Bracket “B”.
7. Open the Printhead Latch and carefully pull the combined Printhead Assembly “A”, Head Mounting Bracket “B”, and Printhead Support Bracket “D” forward from the Head Bracket “C”, removing the Ribbon Cable “G” from the Printhead Assembly “A” when there is sufficient clearance.
8. Remove the screws from the Printhead Support Bracket “D” and the remaining screws securing the defective Printhead Element Assembly “A,” noting the location of each screw to assure proper reassembly.

CAUTION: The Printhead Element Surface can be scratched and damaged by coming in contact with any hard or abrasive objects.

9. Install the new Printhead Element Assembly “A”, making sure that it mates properly with the mounting posts on the Head Mounting Bracket “B” before attempting to reinstall the screws. (Leave the Printhead Support Bracket “D” screws loose to allow for adjustment.)
10. Reinstall the assembly into the printer assuring that the Head Mounting Bracket “B” slides under the wings of the Head Bracket “C”.



Part	Dots/mm	
	6	8
A	44200M	44000M

Figure 5.11 Type C Printhead Replacement

11. Push the Ribbon Cable “G” into the Print Element Assembly “A” connector, making sure that it is fully seated. (Failure to fully seat the connector may result in damage to the Printhead Element Assembly on power-up.)
12. Loosely install the Position Locking screws “H” and adjust the position of the Head Mounting Bracket “B” until the pencil marks from step 3 are aligned, then tighten the screws.
13. Reinstall the Ground Strap, Screw, and Star Washer removed in step 5.
14. Loosely install the Strip Plate “F”.

NOTE: Use a cotton swab moistened with Zebra-recommended cleaning solution (part # 01426) to clean the element surface before printing.

15. Load Media and Ribbon and turn the printer power ON.
16. Adjust the printhead voltage. See “Printhead Voltage Adjustment”, page 5-19.
17. Turn the Power OFF and, while pressing the PAUSE Key, turn the Power back ON to initialize the “Head Alignment” test, or download a format you wish to use and check the print quality.
18. If satisfied with the printing results, tighten the “D” Printhead Support Bracket screws while the head is latched. If further adjustments are necessary, proceed with the “Type C Print Quality Adjustments” on the next page, beginning with Step 5.

Type C Print Quality Adjustment

NOTE: Proceed only after you have verified that the proper media and ribbon combination is being used, the “DARKNESS” setting is correct and the head pressure is properly balanced. See “Printhead Pressure Adjustment”, page 5-20.

1. Remove the ribbon if installed.
2. Close and latch the printhead then use a pencil to outline the wings of the Head Bracket “C” on the Head Mounting Bracket “B”. See Figures 5.11 and 5.12. These marks will be used to identify the original position and gauge movement of the Head Mounting Bracket “B” during adjustment.
3. Load Media and Ribbon if used.

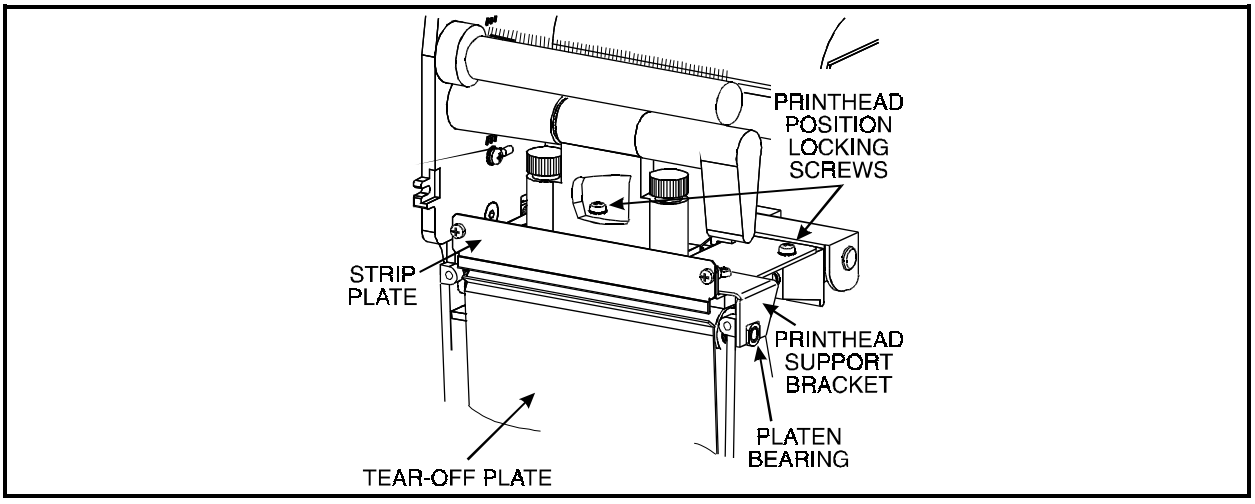


Figure 5.12 Type C Printhead Adjustment

4. Turn the Power OFF and, while pressing the PAUSE Key, turn the Power back ON to initialize the “Head Alignment” test, or download a format you wish to use while performing this adjustment. Pause the printer and proceed.
5. With the head still latched, **slightly loosen** the Position Locking Screws “H” and the two screws holding the Printhead Support Bracket “D”.
6. Move Head Mounting Bracket “B” forward or back as required by grasping the Strip Plate “F” at the screw mounts. Observe the relative movement of the Head Mounting Bracket “B” where you have outlined the Head Bracket wings. Re-tighten the Position Locking Screws “H” then check print quality.
7. Print one or two labels and check for improvement or degradation of print. Repeat steps 5 through 7 until satisfactory results are achieved. (*Movement of 1 mm or less should be attempted between each print quality check. Try to maintain parallelism by observing the horizontal lines relative to the top of the printed labels using the Pause key “Head Alignment” test pattern.*)
8. When completed, tighten the screws on the Printhead Support Bracket “D”.

Printhead Voltage Adjustment

When a Printhead or the printer's Power Supply is replaced, the Printhead Voltage must be adjusted for the proper value. This adjustment establishes the voltage applied to the print elements during the printing process. When adjustment is necessary, follow the procedure below.

CAUTION: This voltage adjustment is critical to the life of the Printhead. DO NOT use this adjustment in an attempt to increase the Printing Darkness.

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1. Calculate the proper Printhead Voltage using the formula or chart below. In the formula, Resistance is the Print Element average resistance value as indicated on a label on the Printhead. The label can be seen by releasing the Printhead latch, moving the ribbon (if any) to the side and looking up at the underside of the Printhead.
2. Remove the three mounting screws and the Electronics Side Panel to provide access to the Main Logic Board.
3. Attach a voltmeter between test point TP8 and Ground on the Main Logic Board. TP8 is located close to J3, the Printhead Connector.
4. Turn the printer ON. See Figure 5.26 for the location of Head Voltage Potentiometer, RV2. RV2 is located on the Power Supply Board, just to the right of the Main Logic/Power Supply Board's mating connector, and is accessible through the opening at the base of the printer. Adjust the Head Voltage Pot (RV2) so the voltmeter reading matches the value determined in Step 1.

Voltage Table: 8 dot/mm Printheads V = 0.479 + sqrt(0.64 *Resistance)

Resistance	Voltage	Resistance	Voltage	Resistance	Voltage	Resistance	Voltage
535	19.0	575	19.7	615	20.3	655	21.0
540	19.1	580	19.7	620	20.4	660	21.0
545	19.2	585	19.8	625	20.5	665	21.1
550	19.2	590	19.9	630	20.6	670	21.2
555	19.3	595	20.0	635	20.6	675	21.3
560	19.4	600	20.1	640	20.7	680	21.3
565	19.5	605	20.2	645	20.8	685	21.4
570	19.6	610	20.2	650	20.9	690	21.5

Voltage Table: 6 dot/mm Printheads V = 0.479 + sqrt(0.978*Resistance)

Resistance	Voltage	Resistance	Voltage	Resistance	Voltage	Resistance	Voltage
315	18.0	340	18.7	365	19.4	390	20.0
320	18.2	345	18.8	370	19.5	395	20.1
325	18.3	350	19.0	375	19.6	400	20.3
330	18.4	355	19.1	380	19.8	405	20.4
335	18.6	360	19.2	385	19.9	410	20.5

Printhead Pressure Adjustment

If printing is too light on one side of the label, or if media with a different thickness is used, printhead pressure may need to be adjusted in order to provide the best print quality. See Figure 5.13 and perform the following procedure:

1. Begin printing a batch of labels. Use a Self Test Label (see Chapter 3) or one of your own label formats.
2. Pause the printing by pressing the “PAUSE” Key and check the print quality.
3. If necessary, increase or decrease Toggle pressure using the knurled adjustment nuts at the top of the Toggle Shafts.
4. Press the PAUSE Key to continue printing and check for proper print quality.
5. Repeat steps 2 through 4 as needed.

NOTE: Printhead life can be extended by using the lowest pressure that produces the desired print quality. Do not increase overall head pressure to increase darkness unless the continued increase of Darkness setting does not provide satisfactory results.

NOTE: When using narrow media, adjust outboard toggle pressure to zero or minimum required for acceptable print. This will reduce the wear on those areas of the Printhead and the Platen where ribbon and media are not present.

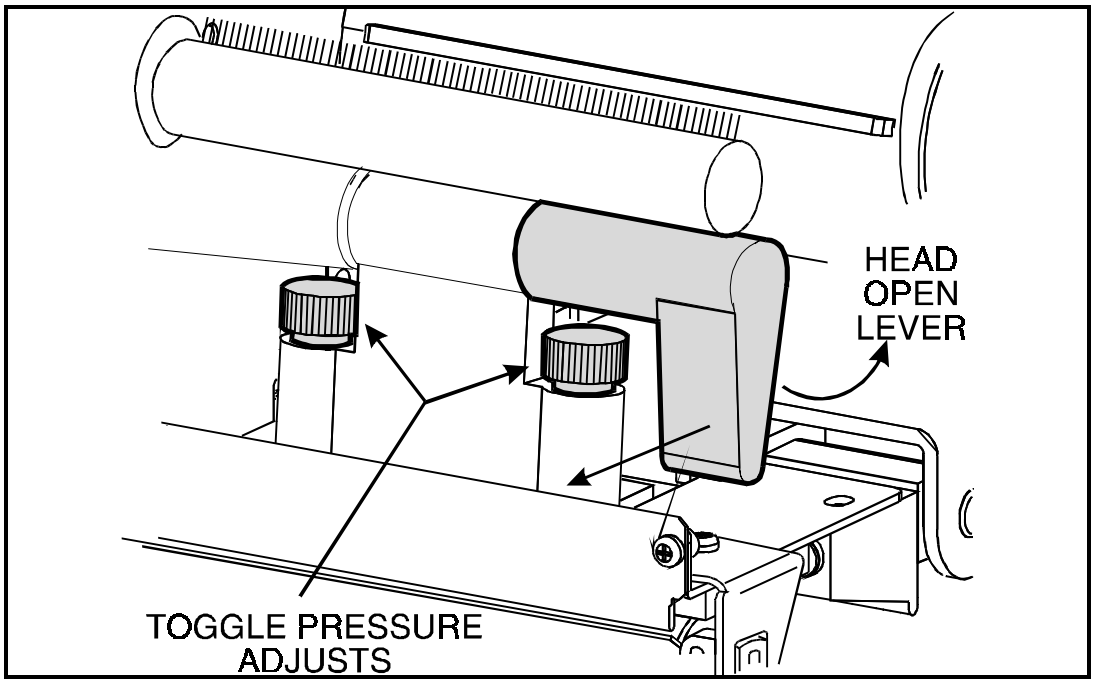

Figure 5.13 Printhead Pressure Adjustment

Cutter Voltage Adjustment

The voltage applied to the printhead is the same voltage applied to the Cutter Module. The specific voltage applied to the cutter motor is controlled by the Home Position Potentiometer.

There are three cases in which you must adjust the Cutter's Home Position Potentiometer:

- Before placing a new Cutter Module into service.
- If you install a new printhead on the printer.
- If you install a Cutter Module on a different printer than the one for which it was adjusted.

1. **Turn the printer power OFF.** Load media and ribbon if not already installed.

2. **Attach the new Cutter Module to the Cutter Cable Connector on the printer and lay it on the table or on the inside of the printer's open Front Door.** DO NOT mount the Cutter Module on the printer.

3. **Press PAUSE while turning the printer power ON (PAUSE Test).** DO NOT allow the printed labels to pass through the Cutter Module! Instead, let them accumulate on the table or floor.

4. **While labels are printing, observe where the Sensor Disc on the Cutter Module stops after completing a cut cycle.** It can be viewed between the Outer Cover and the Side Plate. The desired stopping position of the Sensor Disc is when the Embossed Line on the Sensor Disc is aligned with the edge of the Side Plate. (See Fig. 5.14).

5. **Adjust the Cutter Sensor.** Adjust the Home Position Potentiometer (See Fig. 5.15) with the provided Potentiometer Adjustment Tool (part # 01428) until the Embossed Line on the Sensor Disc is in alignment with the Side Plate Edge. If the Embossed Line is too far to the right, turn the potentiometer counter-clockwise, wait for the cutter to complete a cut cycle, and again observe the position. If the Embossed Line is too far to the left, turn the potentiometer clockwise and observe the position.

6. **Turn printer power OFF.**

You may now install the Cutter Module. Refer to the Cutter Module cleaning procedure in Section 4.

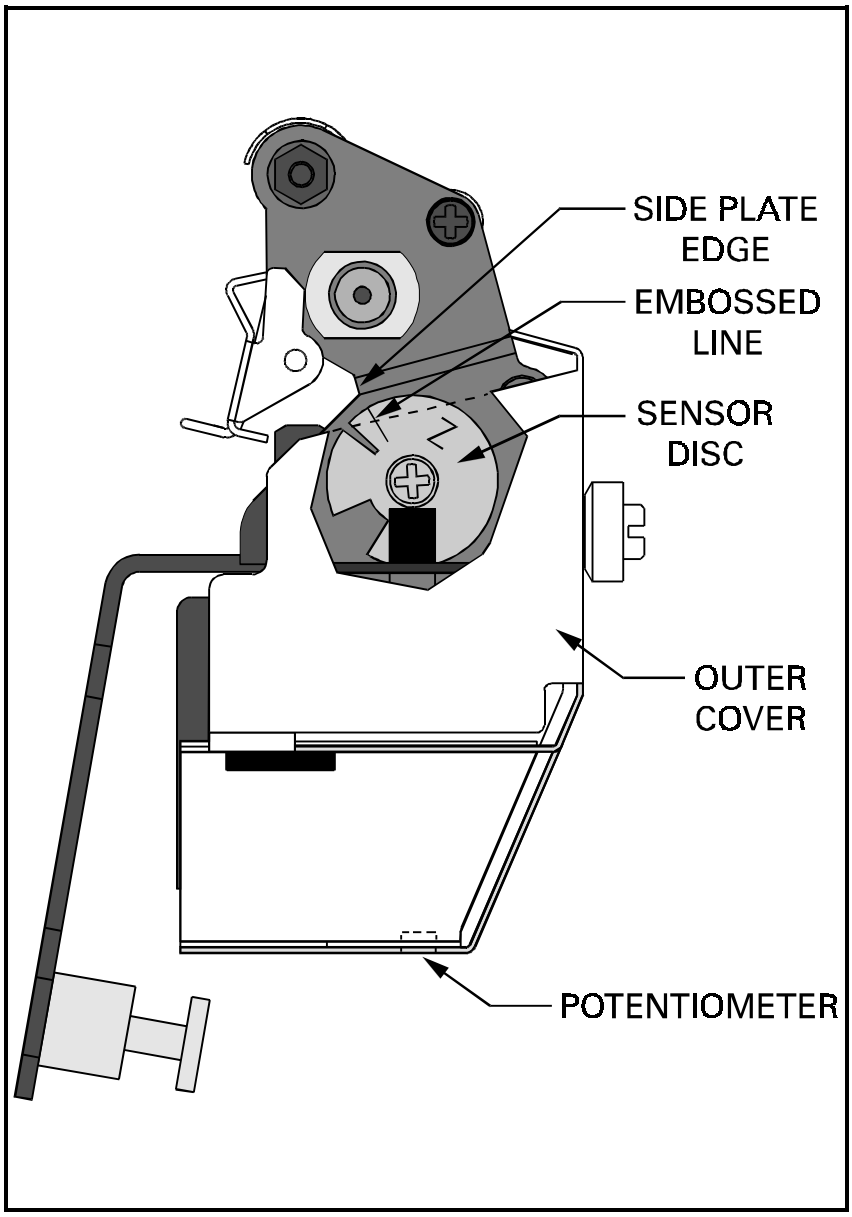

Figure 5.14 Properly Adjusted Cutter Sensor

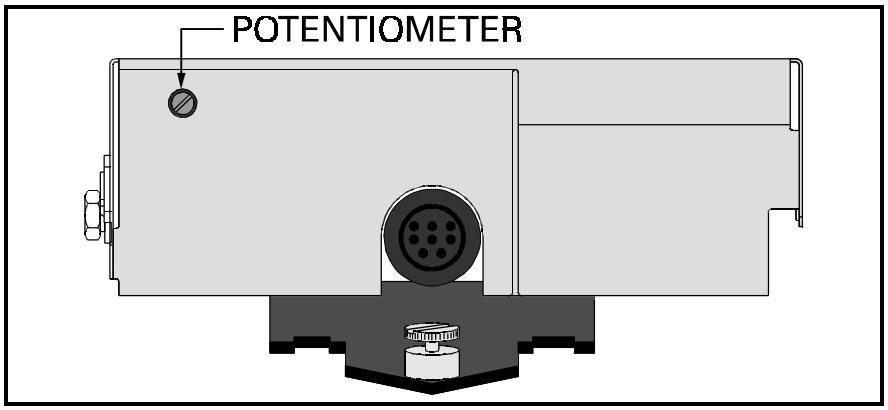

Figure 5.15 Potentiometer on Bottom of Cutter Module

Strip Plate Adjustment

The Ribbon Strip Plate position can be adjusted to provide proper tracking and separation of the ribbon from the media after printing. If the ribbon does not track properly, or if ribbon wrinkle problems are experienced, refer to Figure 5.8 and adjust the strip plate by following this procedure:

1. Begin printing labels.
2. Loosen the Phillips head screws holding the strip plate to the front of the printhead assembly.
3. Position the strip plate so the ribbon tracks properly, does not wrinkle and stays flat and smooth when fed to the upper ribbon guide when the FEED button is pressed.

   If the strip plate is too high the result will be a noisy operation and possible wrinkle, especially on backfeed. Smudging or print quality problems will result if the strip plate is positioned too low.
4. Tighten the strip plate adjustment screws. Torque screws to 5-6 inch-pounds.
5. Print a minimum of fifty (PAUSE Test) labels, checking for ribbon wrinkle and proper ribbon tracking. Readjust strip plate if required.
6. If ribbon wrinkle and/or tracking problems persist, check the torque settings of the Ribbon Take-Up Spindle as detailed in this chapter and adjust the tension if required.

Ribbon Supply Spindle Replacement

The early style of Ribbon Supply Spindle is no longer available. All Ribbon Supply Spindles are now the “dual-tension” style shown in Figure 5.17.

1. Remove the Main Logic Board.
2. Remove the existing spindle using one of the two methods below.

   Method 1: For printers that DO NOT have a Dual-Tension Spindle currently installed. Refer to the “Ribbon and Media Supply” diagram in Section 7.

   a) Loosen the 2 set screws (10494) in the Clutch Collar.

   b) Remove the Clutch Collar, Ground Chain, Nylon Washer, and Clutch Spring.

   c) Loosen the 2 set screws (44100) in the Shaft Collar (44118).

   d) Remove the Shaft Collar (44118) and Washer (30251).

   e) Remove the Ribbon Supply Spindle and washers.

   f) See Figure 5.16 and cut the existing Ground Chain loop (44172-1) near the connector as shown.

Method 2: For printers that DO have a Dual-Tension Spindle currently installed. *For this method, refer to Figure 5.17.*

a) Loosen the Screw (10432) at the end of the Spindle Shaft.

b) Remove the Screw, Chain Clip (44174), and Washer (44356) from the end of the Spindle.

c) Remove the Spindle and associated Washer (30251) from the Printer Frame.

3. Install the new Spindle. If you are replacing a Dual-Tension Spindle, skip to Step d.

   a. Slightly open the Chain Clip (44174) as shown in Detail A.

   b. Place the first ball through the opening and into the bend of the clip.

   c. Close the Chain Clip to hold the chain.

   d. Install the new Dual-Tension Spindle according to Figure 5.17.

4. Re-install the Main Logic Board.

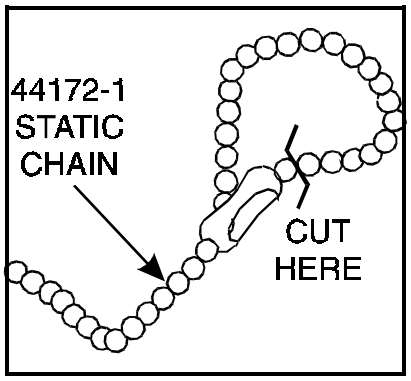

Figure 5.16 Ground Chain

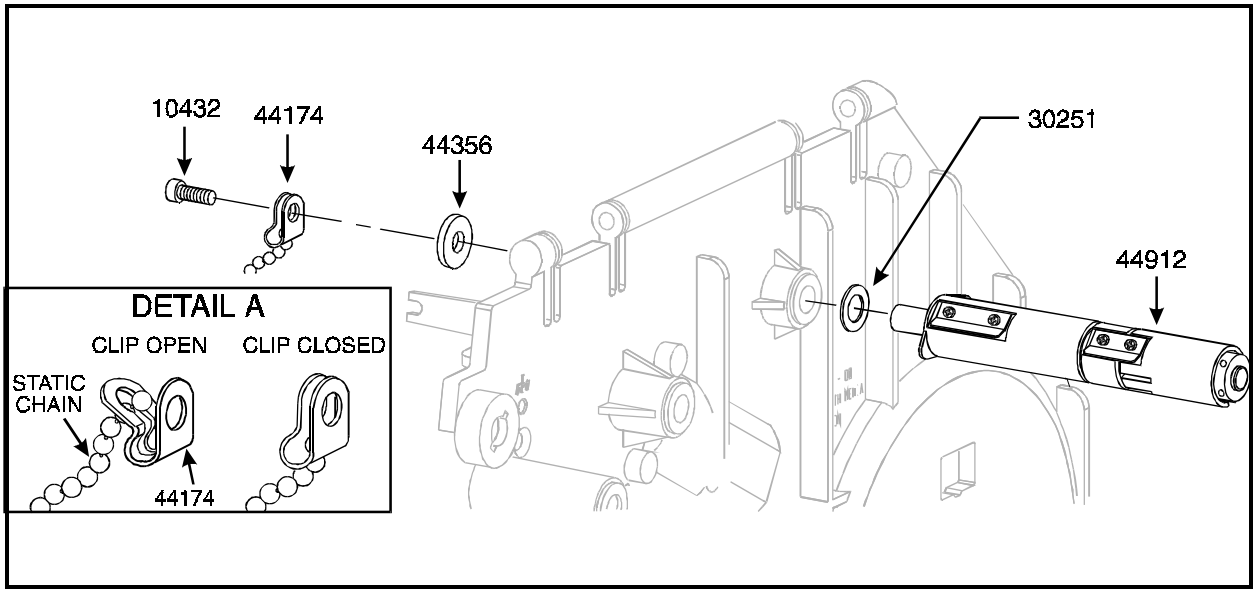

Figure 5.17 Dual-Tension Spindle Assembly

Dual-Tension Ribbon Supply Spindle Adjustment

(If your printer is not equipped with a Dual-Tension Ribbon Supply Spindle like the one shown in Figure 5.17, skip this section.)

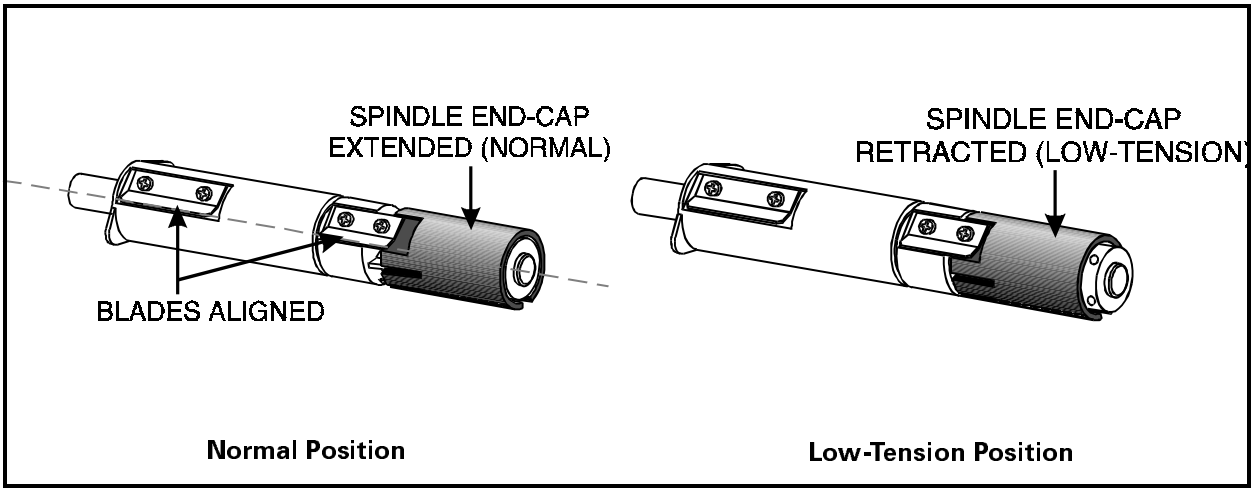

Figure 5.17 Dual-Tension Spindle Adjustment

Ribbon Supply Spindle: Normal Position

In the Normal Position, the Dual-Tension Spindle provides the desired amount of ribbon back-tension for different ribbon widths.

To put the Spindle in the Normal Position, firmly pull the Spindle End-Cap until it clicks into place, as shown in Figure 5.17.

Ribbon Supply Spindle: Low-Tension Position

Low-Tension Position is used in *limited applications* with ribbons wider than 2.4" (60 mm) to provide lower ribbon back-tension. Low-Tension Position is only recommended when normal tension hampers the ribbon movement.

To put the Spindle in the Low-Tension Position, firmly push the Spindle End-Cap until it clicks into place, as shown in Figure 5.17.

Ribbon Take-Up Spindle Tension Adjustment

1. Insure that the printer is OFF and that Media and Ribbon are loaded.
2. Remove any used ribbon from the Ribbon Take-up Spindle by pressing the button on the end of the Spindle and sliding off the ribbon.
3. Remove the Cover from the Electronics Compartment and locate the Spindle Tension Adjustment Potentiometer (RV3) on the Main Logic Board. See Figure 5.8 for the location of RV3.
4. Locate the Ribbon Take-Up Motor behind the upper left corner of the Main Logic Board and check the style of Power Lead connection at the motor.

   If removable spade lug connectors are used, continue with Step 11 of the adjustment procedure on the following page. If the power leads are soldered to connecting pins on the motor, continue with the procedure.
5. Use tape to attach the Mylar strip (part # 01776) to the Ribbon Take-up Spindle. Wind the Mylar strip around the spindle three full turns counterclockwise.
6. Attach a 1000 gram spring scale to the end of the Mylar tape and hold it stationary. See Figure 5.18.
7. Press the PAUSE Key and turn the power ON. Self test labels will feed out and the spring scale indicator will move.
8. While reading the spring scale, adjust potentiometer RV3 clockwise or counterclockwise and set the tension to a value between 450 and 550 grams.
9. When correct tension is obtained, press the PAUSE Key to stop the label printing process and remove the spring scale and Mylar strip.
10. Reload the media and ribbon and remount the Electronics Cover.

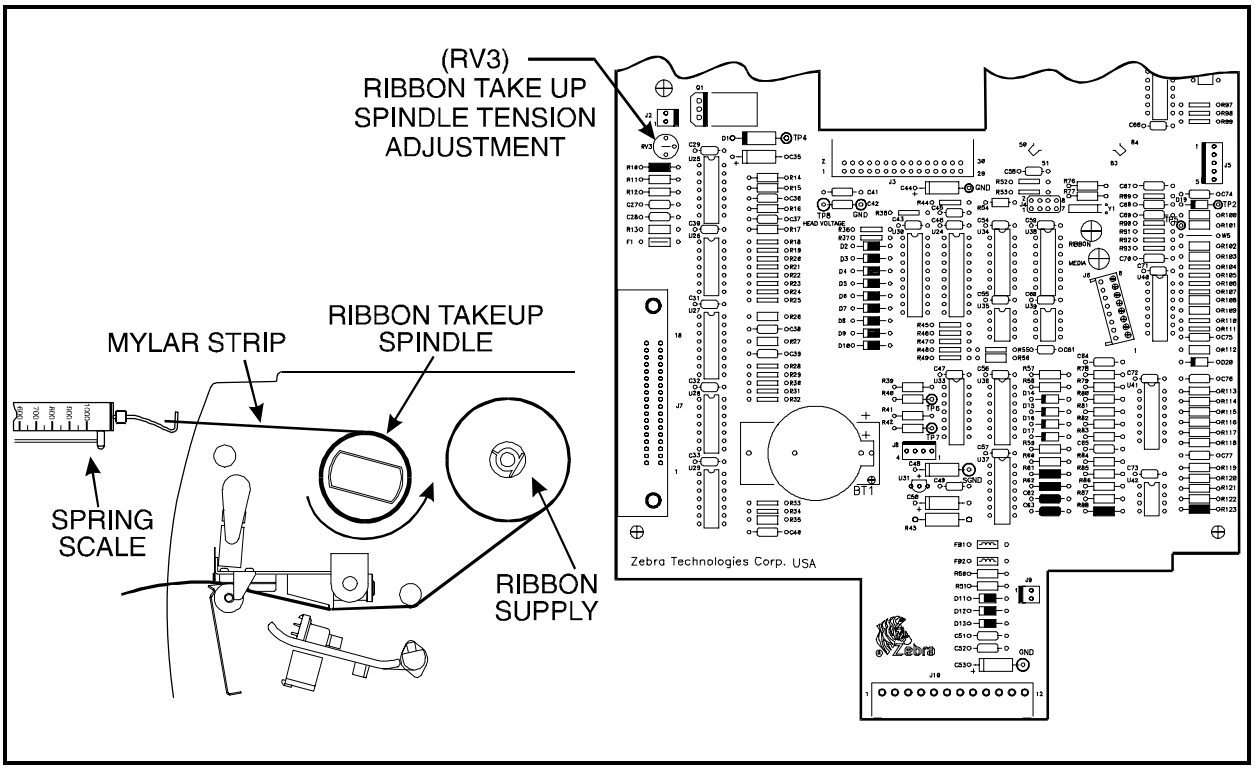

Figure 5.18 Ribbon Take-Up Spindle Tension Adjustment

Alternate Ribbon Take-Up Spindle Tension Adjustment

This procedure starts on the previous page. The sequence below is to be followed only if the power leads at the Ribbon Take-Up Motor are connected by removable spade lug connectors.

11. Disconnect the RED power lead from the spade lug connector at the rear of the Motor. **Be very careful when sliding the spade clip connector off of the spade lug so the capacitor leads are not broken.**
12. Attach the Negative (Black) lead of an Ammeter to the uncovered spade lug on the motor and the Positive (Red) lead of the Ammeter to the spade clip removed in the previous step.
13. Set the Ammeter current range to read at least 2 Amps.
14. Press the PAUSE Key while turning the power ON. After the Power ON Self Test is completed, Self Test labels will feed out at a rate of 2 inches per second. This is the printing speed required for the following steps.
15. While viewing the display on the Ammeter, adjust potentiometer RV3 clockwise or counterclockwise to obtain a current level of 1.15 Amps while printing labels.
16. When the correct current level is obtained, press the PAUSE Key to stop the label printing process.
17. Turn the printer power OFF, reconnect the RED power lead to the motor and remount the Rear Cover.
18. Reload the media and ribbon and the printer is ready to operate.

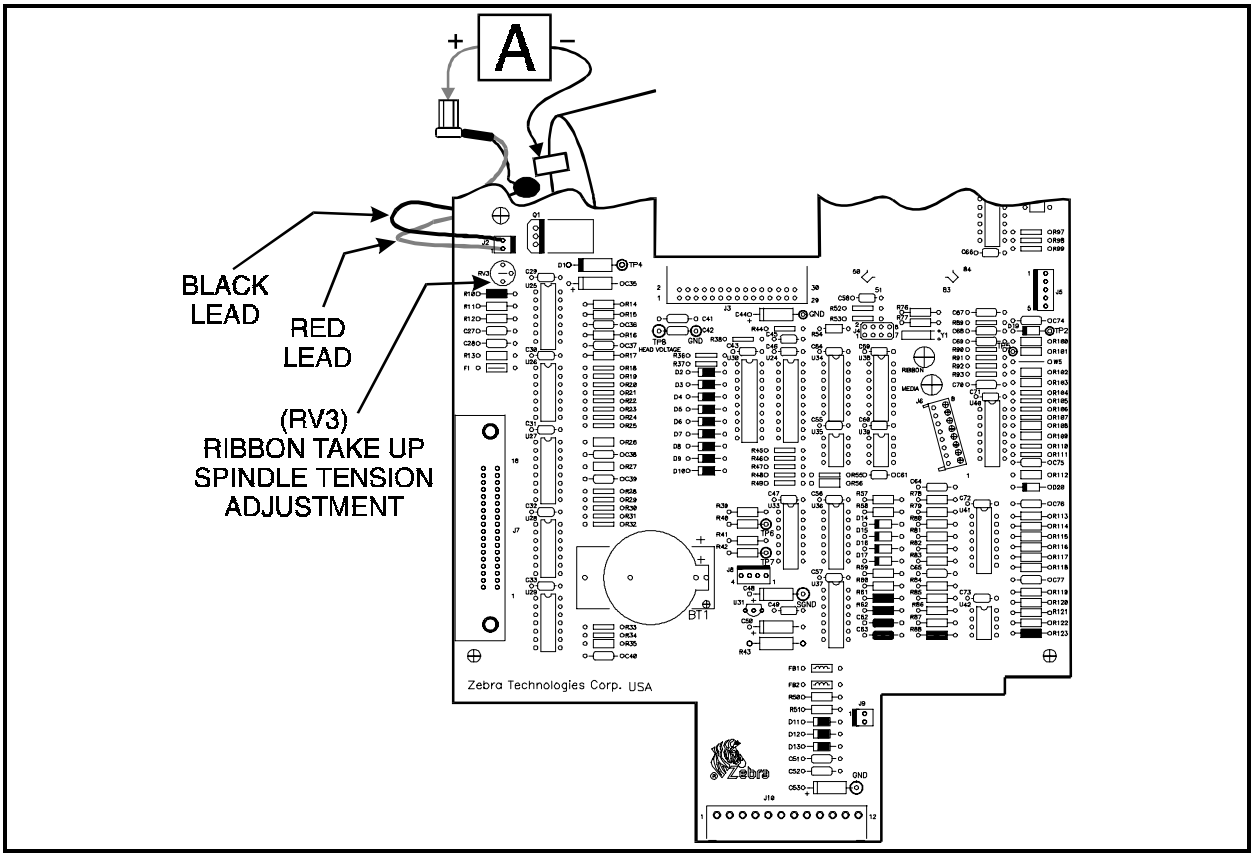

Figure 5.19 Ribbon Take-Up Spindle Tension Adjustment

Backing Rewind Spindle Adjustment

1. To adjust the Backing Rewind Spindle Tension refer to Figure 5.20.
2. Turn Printer OFF and remove media and ribbon.
3. Tape the end of the Mylar strip to the Rewind Spindle.
4. Wrap the Mylar strip around the spindle in a clockwise direction.
5. Connect a 1000 gram spring scale to the Mylar strip. See Figure 5.20.
6. Pull the spring scale to create the tension measurement.
7. The rotation of the spindle, created by the spring scale should be smooth similar to the pace of a sweep second hand on a clock. Make sure there is no platen movement when measuring the spindle tension.
8. When the spindle is moving smoothly with even pull on the spring scale, read the tension setting on the spring scale.
9. The correct tension should be 700 grams (+100/-50).
10. If the tension is incorrect, use a pair of utility pliers and hold the locking nut stationary while rotating the spindle until there is easy access to the 1.5 mm Hex locking screws.
11. Using a 1.5mm Hex driver, loosen the locking nut Hex screws.
12. Using the utility pliers, turn the Hex nut clockwise to increase and counterclockwise to decrease tension.
13. After achieving the correct tension, tighten the 1.5 mm Hex locking screws.
14. Reload media and ribbon and test the printer's backing rewind function.

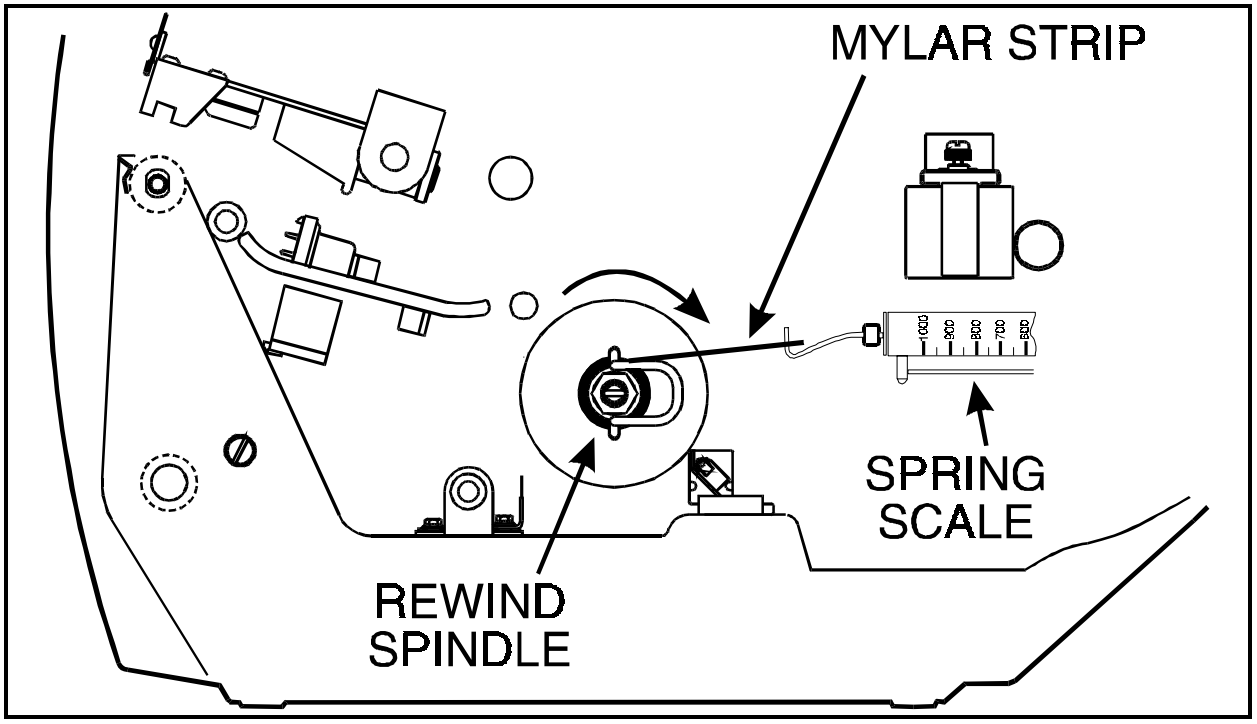

Figure 5.20 Backing Rewind Spindle Adjustment

Media Sensor Assembly Removal

1. Turn printer OFF and wait for all the front panel lights to turn OFF.
2. Remove the power cord, media and ribbon.
3. Remove the Electronics Compartment Cover.

CAUTION: Before removing and replacing electronic boards or assemblies, observe proper electrostatic and electrical safety precautions.

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4. Disconnect the Main Logic Board's Ribbon Cable connector from the contact pins of the Sensor Circuit Board.

NOTE: Certain printers may have the media sensor contact pins inserted directly into a connector mounted directly to the Main Logic Board.

5. Refer to the Media Sensor and Ribbon Guides drawing in Section 7 and carefully slide out the Upper Media Guide Assembly (part # 44140M).
6. Orient the Printer with the media compartment facing the technician.
7. Referring to the Media Sensor and Ribbon Guide Drawing in Section 7, locate the two mounting screws (part # 44114) used to secure the Media Sensor Assembly to the Main Frame.
8. Using a Long Reach, Magnetic Tip, #2 Phillips screwdriver, carefully remove the two mounting screws.
9. Carefully remove the Media Sensor Assembly from the Main Frame.

CAUTION: After removing the Media Sensor Assembly, note the position of the sliding tab. This tab is connected to the Upper Media Sensor.

Media Sensor Assembly Replacement

1. Match the position of the sliding tab of the replacement sensor assembly with that of the sensor assembly previously removed.
2. Carefully install the Media Sensor Assembly so that the connector pins fit into the guide holes on the back of the Main Logic Board. Attach the ribbon cable connector to the contact pins of the media sensor.

NOTE: On certain printer models removal of the Control Panel Assembly allows visual inspection of the alignment of the Main Logic Board and the Media/Ribbon Sensor Assembly connection.

3. Using a Long Reach, Magnetic Tip, #2 Phillips Screw Driver, reinstall the mounting screws. Torque screws to 10-12 inch-pounds.
4. Reinstall the Upper Media Guide Assembly.
5. Reinstall the media and ribbon.
6. Reconnect the power cord. Turn the printer ON, recalibrate the media and check for proper media and ribbon operation.

Control Panel Assembly Removal

1. Refer to the Cover Assembly Drawing in Section 7 and remove the Front Door (part # 44076) of the printer.
2. Remove the Printer's Electronics Cover and refer to the Control Panel Drawing part # 44072 in Section 7.
3. Remove the 5mm Hex screw that attaches the Control Panel Assembly to the Main Frame.
4. Detach the Control Panel Ribbon Cable from the Main Logic Board. Note the position of the Ferrite Core on the cable.
5. Grasp the Control Panel Assembly by its sides and carefully lift it out of the printer base guide slots.

NOTE: On certain printer models removal of the Control Panel Assembly allows visual inspection of the alignment of the Main Logic Board and the Media/Ribbon Sensor Assembly connection.

Control Panel Circuit Board Replacement

1. Detach the Control Panel Board from the Control Panel Cover, by removing the two (2) 5mm Hex mounting screws.
2. Carefully align the replacement board over the mounting holes on the Control Panel Cover and reinstall the two (2) 5mm Hex screws. Torque screws to 6 inch-pounds.
3. Remount the Control Panel Assembly in the base guide slots and secure into the Main Frame by reinstalling the 5mm Hex screw.
4. Reattach the Control Panel Ribbon Cable to the Main Logic Board. Insure the Ferrite Core is positioned properly.
5. Remount the Printer's Electronics Cover and the Front Door

Main Logic Board Removal

CAUTION: Prior to removing and replacing circuit boards and electrical assemblies, observe proper electrostatic and electrical safety precautions.

1. Refer to the Logic Board and Control Panel drawing in Section 7. Turn the printer OFF and remove the power cord.
2. Orient the printer with the electronics compartment facing the technician.
3. Remove the three 5mm Hex screws that mount the Electronics Compartment Cover to the Main Frame and remove the cover.
4. Remove the Control Panel Assembly. See instructions on page 5-31.
5. Remove the Media Compartment Cover (Main Door part # 44070 in Section 7) by firmly grasping the cover and pushing it forward and out.
6. Remove the Media Sensor Assembly by removing (2) Phillips screws and pull assembly away from the Main Frame. See instructions on page 5-30.

NOTE: See page 5-30 and perform the Media Sensor Assembly Removal Procedure before removing the Main Logic Board.

7. Note the positions of and unplug all Ribbon connectors and small wire connectors, Head, Control Panel, Tension Motor, Take Label Sensors and Full Roll Sensor cables connected to the Main Logic Board.
8. Remove the two 5mm Hex screws used to mount the Main Logic Board to the Main Frame. For newer printers, you must also remove the two standoffs (Part A on the schematic in Section 7) and the flat jumper (44537).
9. Rotate the Head Open Flag out of the way.
10. Carefully grasping both sides of the Main Logic Board, pull the board straight up from the Power Supply connector and out of the unit.

Main Logic Board Installation

1. Carefully align connector J9 at the bottom of the Main Logic Board with the mating Power Supply connector.
2. Push the Main Logic Board straight down until connector J9 has seated completely onto the power supply.
3. Reinstall the two mounting screws and reconnect all cables and connectors.
4. Reinstall Media Sensor Assembly, Front Control Panel Assembly, Rear Cover and Main Door.

Note: When you replace a Main Logic Board on a Stripe with the Cutter Option, you must remove the jumper between pins 4 and 5.

EPROM Software Installation

To replace the EPROMs when installing firmware enhancements, **read the instructions included in the upgrade kit.**

Parts Supplied

The Software Kit Number is 44724VXX.xx. Each Kit may contain up to three (3) EPROMs. The Chip Socket position for each chip is indicated on the label of each chip.

Upgrade Procedure

1. Be sure the printer is OFF. Disconnect the AC power cord and the Signal Interface Connector.
2. Remove the Electronics Compartment Cover by removing the three Phillips/Hex screws.

CAUTION: Prior to removing and replacing the EPROMs, observe proper electrostatic and electrical safety precautions.

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3. Carefully remove the old EPROMs from their sockets. Use of an EPROM extractor tool is highly recommended.
4. Insert the new EPROMs with the notches aligned with the chip socket. Make sure all leads are properly seated in the sockets when the chips are inserted. See Figures 5.21, 5.22, and 5.23.

CAUTION
An EPROM will be permanently damaged when power is turned ON if it is mounted upside down in its socket.

Double check that all EPROMs are in the proper socket, with alignment notches pointing UP and all leads properly inserted in the sockets.

If you have any doubts, contact Zebra Technical Support before you power up.

(708) 913-2259 (ZEBRA USA)
After Jan. 1996, call (847) 913-2259

+44 (0) 1494 536644 (ZEBRA UK)

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5. Reinstall the Electronics Compartment Cover and screws.
6. Reconnect the AC power cord.
7. With media and ribbon loaded, hold the CANCEL switch depressed while turning the power ON. The printer will go through the Power ON Self Test sequence and print a configuration label. This label will indicate a “Firmware” level that matches the software revision just installed.

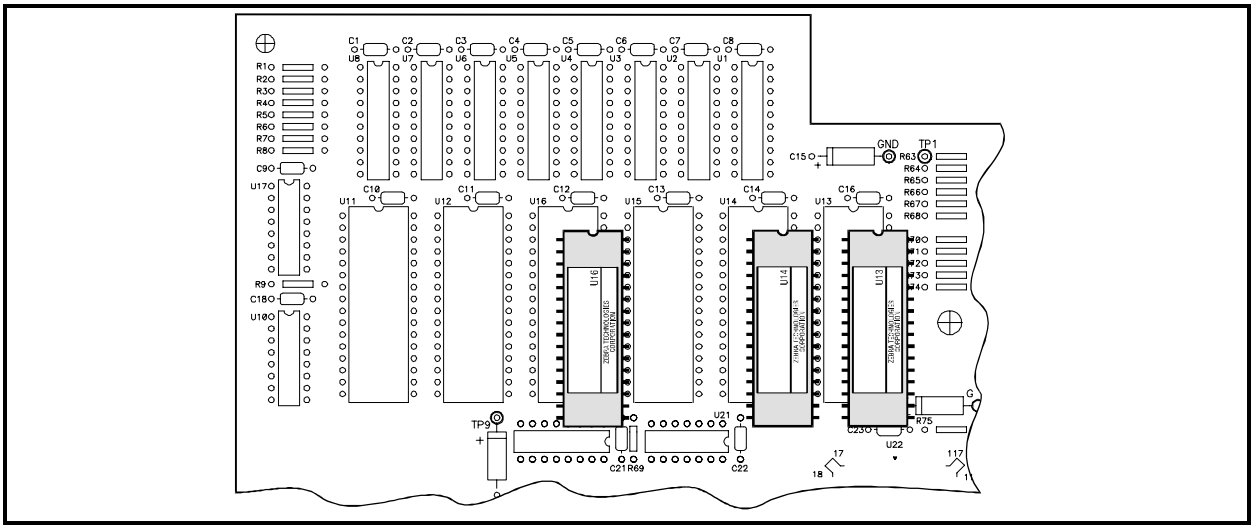

Figure 5.21 S-500 Main Logic Board

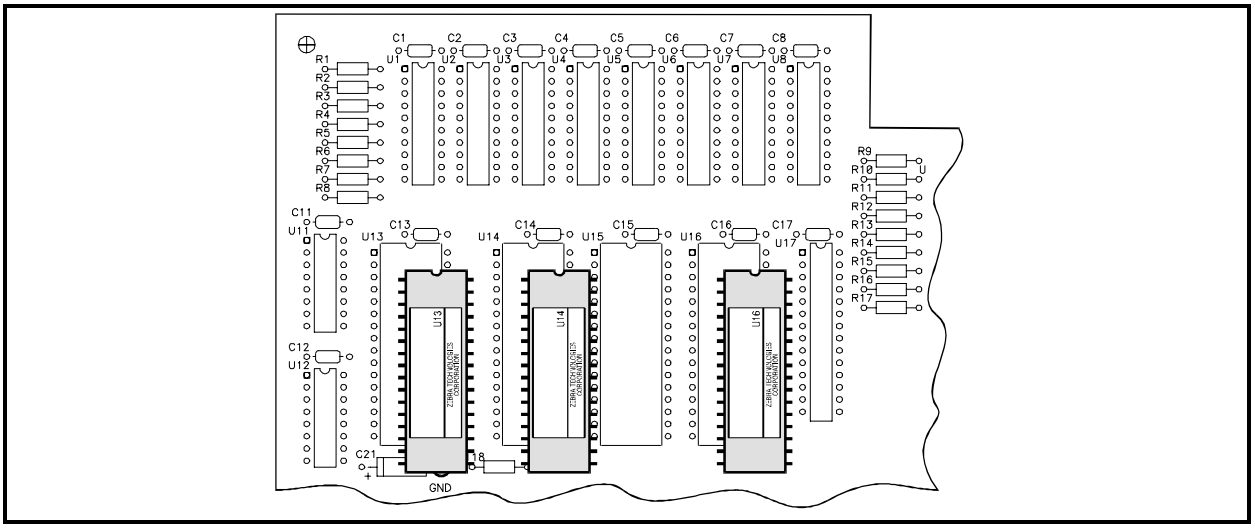

Figure 5.22 Alternate S-500 Main Logic Board

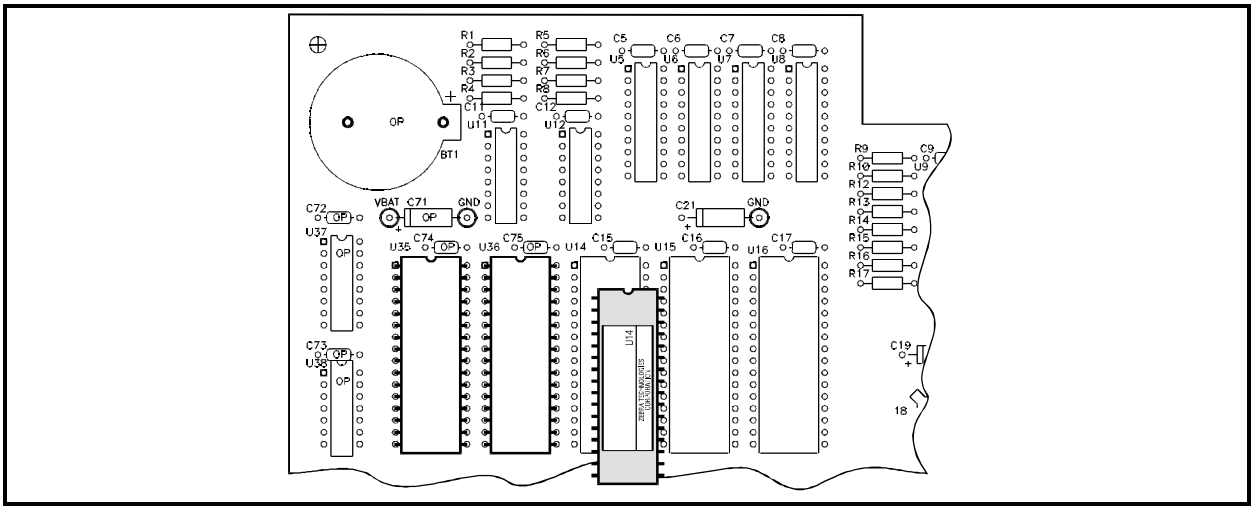

Figure 5.23 S-300 Main Logic Board

Main Drive Belt Removal, Replacement, and Adjustment for Printers Without the Peel-Off Option

1. Turn the printer OFF and remove the power cord.
2. Remove the media and ribbon.
3. Remove the Rear Cover, Front Control Panel Assembly, Media Sensor Assembly and the Main Logic Board. See previous procedures if necessary.

NOTE: Scribing a mark into the outer edge of the Idler Pulley and into the printer frame, prior to performing step # 4, may help when adjusting the belt tension.

4. See Figure 5.24 and loosen the shoulder bolt holding the Idler Pulley in position until the pulley freely moves up and down.
5. Remove the old Main Drive Belt and install the new one.
6. Hook a 1000 gram spring scale to the belt as shown in Figure 5-24, and carefully pull up on the Idler Pulley to increase belt tension.
7. When a scale reading of 500 grams (± 100 grams) creates a deflection of 1/4 inch, tighten the shoulder bolt to a torque of 20 inch-pounds.
8. Reinstall the Main Logic Board, Media Sensor Assembly, Front Control Panel Assembly and Rear Cover.
9. Reload Media and Ribbon.
10. Reconnect power cord, power up and test printer.

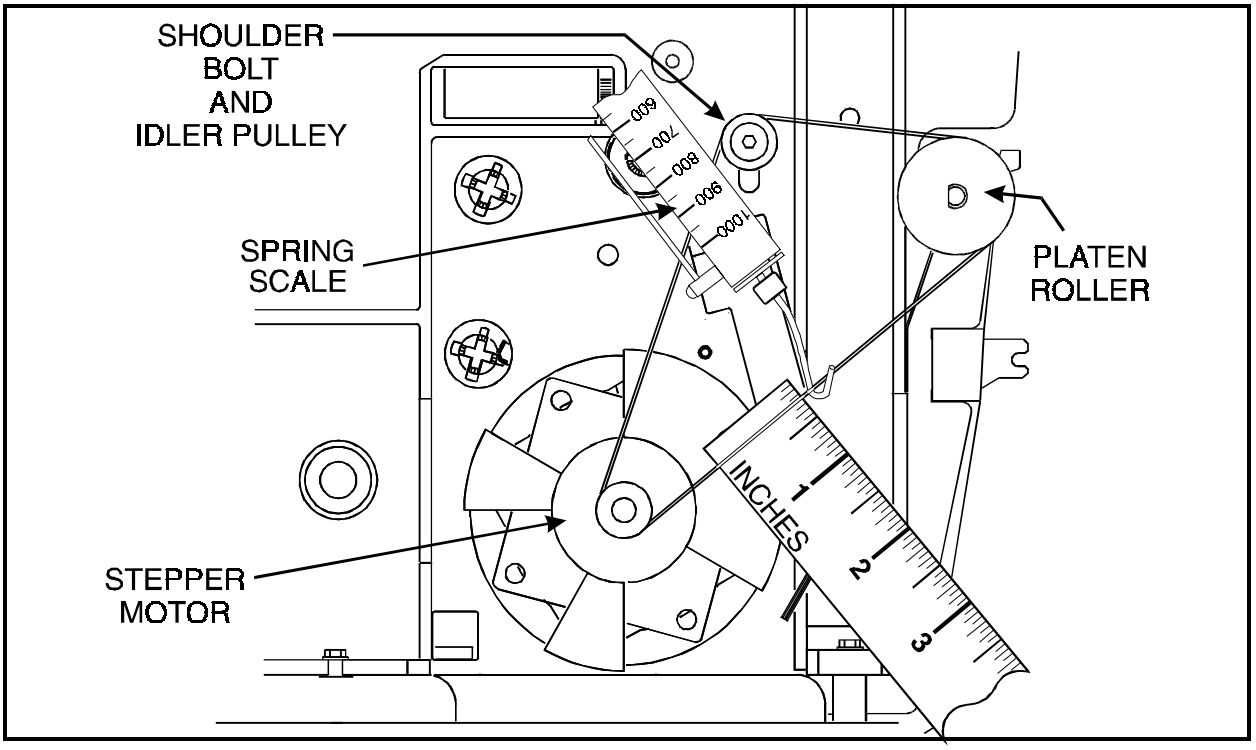

Figure 5.24 Main Drive Belt Replacement and Adjustment

Main Drive Belt Removal, Replacement, and Adjustment for Printers Equipped With the Peel-Off Option

These procedures apply to the Main Drive Belt and the Rewind Spindle Drive Belt.

1. Turn the printer OFF and remove the power cord.
2. Remove the media and ribbon.
3. Remove the Rear Cover, Front Control Panel Assembly, Media Sensor Assembly and the Main Logic Board. See previous procedures if necessary.

NOTE: Scribing a mark into the outer edge of the Idler Pulley and into the printer frame, prior to performing step # 4, may help when adjusting the belt tension.

4. See Figure 5.25 or 5.26 and loosen the shoulder bolt holding the Idler Pulley in position until the pulley freely moves up and down.
5. Remove the appropriate old Drive Belt and install the new one.
6. Hook a 2200 gram spring scale to the new belt as shown in Figure 5.25 or 5.26, and carefully pull up on the Idler Pulley to increase belt tension.
7. **Main Drive Belt Adjustment** When a scale reading of 900 grams (2 lbs.) ± 225 grams (1/2 lb.) creates a deflection of 1/4 inch, tighten the shoulder bolt to a torque of 20 inch-lbs.
   Rewind Spindle Drive Belt Adjustment When a scale reading of 1800 grams (4 lbs.) ± 225 grams (1/2 lb.) creates a deflection of 1/4 inch, tighten the shoulder bolt to a torque of 20 inch-lbs.
8. Reinstall the Main Logic Board, Media Sensor Assembly, Front Control Panel Assembly and Rear Cover.
9. Reload Media and Ribbon.
10. Reconnect power cord, power-up, and test printer.

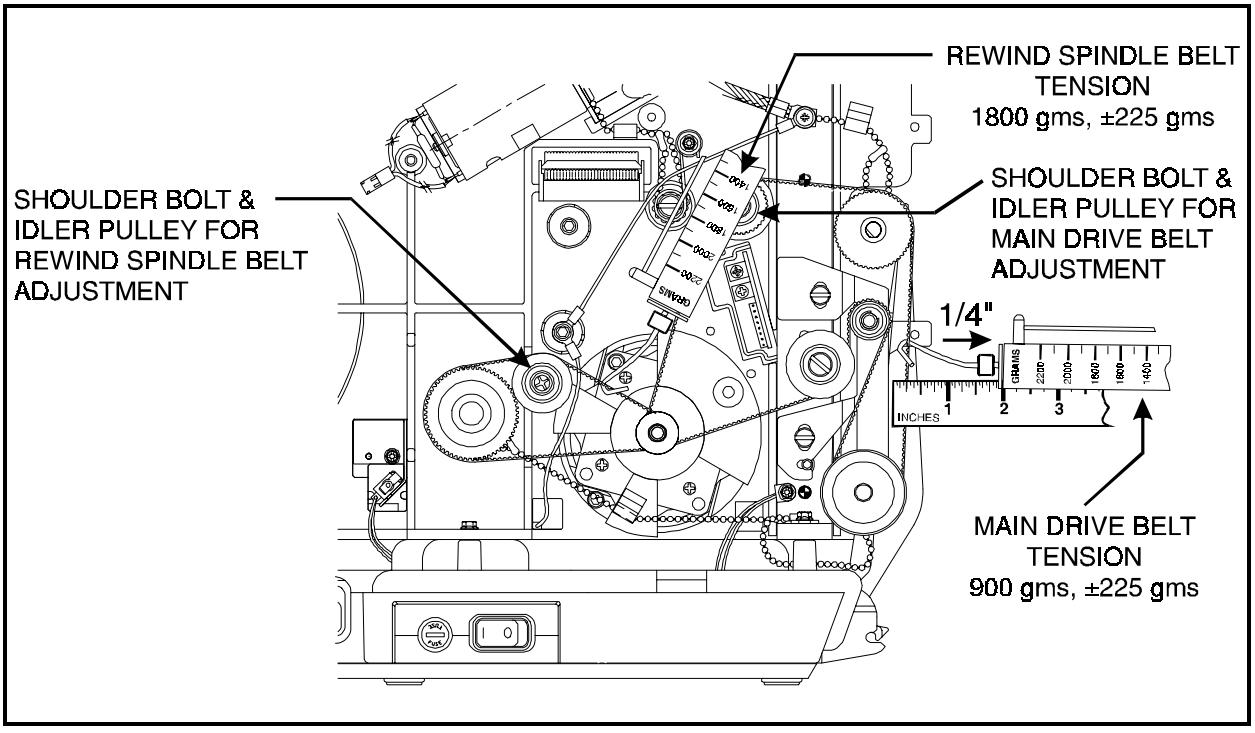

Figure 5.25 Peel-Off Drive Belt Adjustment: Old Design

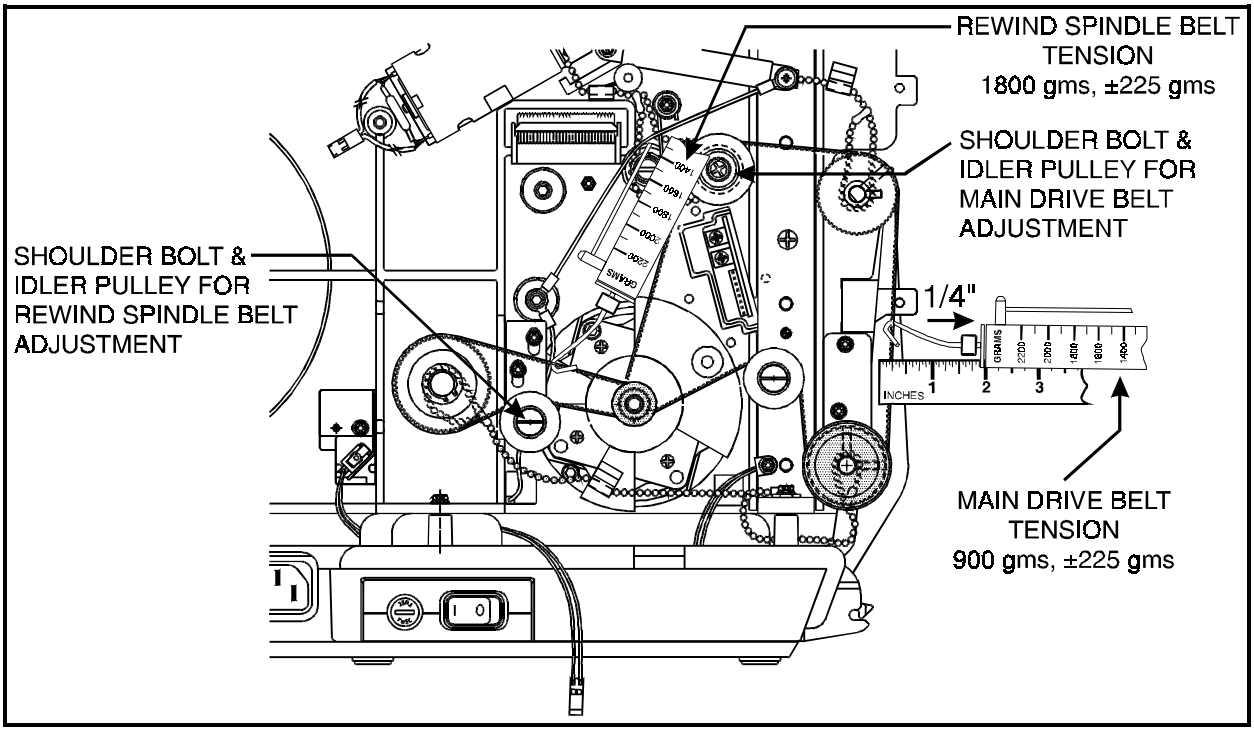

Figure 5.26 Peel-Off Drive Belt Adjustment: New Design

Platen Replacement

1. Refer to the Platen and Power Supply Drawing in Section 7.
2. Remove the Rear Cover, Front Control Panel Assembly, Media Assembly, Main Logic Board and Tear Off Plate. See previous procedures if necessary.
3. Loosen the fastener holding the Idler Pulley and remove the Main Drive Belt.
4. Disengage the Platen ground chain, remove the Platen and pivot the Platen Bearings out of the slots.
5. Remove the Platen Pulley.
6. Install Bearings, Washers and Platen Pulley on the new Platen exactly as found on the old one.
7. Reinstall the platen assembly by hooking the out-board bearing and dropping the in-board bearing into its slot.
8. Re-engage the Platen ground chain.
9. Reinstall the Main Drive Belt.
10. Adjust the tension on the Main Drive Belt as explained in the instructions on Page 5-35 (Standard Printer) or 5-36 (Printer with PEEL-OFF Option.)
11. Reinstall the Main Logic Board, Media Sensor Assembly, Tear Off Plate, Front Control Panel Assembly and Rear Cover.

Ribbon Take-Up Motor Replacement

1. Turn the printer OFF and remove the power cord.
2. Refer to Ribbon/Media Supply and Drive System drawings in Section 7.
3. Remove the Rear Cover, Front Control Panel Assembly, Media Sensor Assembly, and Main Logic Board. See previous procedure if necessary.
4. Loosen two (2) 1.5mm Hex screws and slide the Bevel Gear (44046-2) from the Ribbon Take-Up Spindle Shaft.
5. Remove two (2) 5mm Hex screws holding Ribbon Tension Motor Assembly and mounting bracket to the Main Frame.
6. Install the new Ribbon Tension Motor Assembly with bracket using the two (2) 5mm Hex screws.
7. Slide the Bevel Gear back on and retighten to shaft.
8. Reinstall the Main Logic Board, Media Sensor Assembly, Front Control Panel Assembly and Rear Cover.
9. Perform the Ribbon Take-Up Spindle Tension Adjustment on page 5-27.

Stepper Motor Replacement

1. Turn the printer OFF and remove the power cord.
2. Refer to the Drive System Drawing in Section 7.
3. Remove the Rear Cover, Front Control Panel Assembly, Media Sensor Assembly and Main Logic Board. See previous procedures if necessary.
4. Loosen the fastener for the Idler Pulley and remove the Main Drive Belt.
5. Remove the screw holding the Stepper Motor (if present).
6. Disconnect the Stepper Motor Cable from the Power Supply.
7. Carefully grasping the Stepper Motor, turn it counter-clockwise and remove from slots.
8. Reverse the procedures in steps 1 through 7 to install the new motor.
9. Adjust the tension on the Main Drive Belt as explained in the instructions on Page 5-35 (Standard Printer) or 5-36 (Printer with Peel-Off Option.)
10. Proceed to the Motor Balance Procedure.

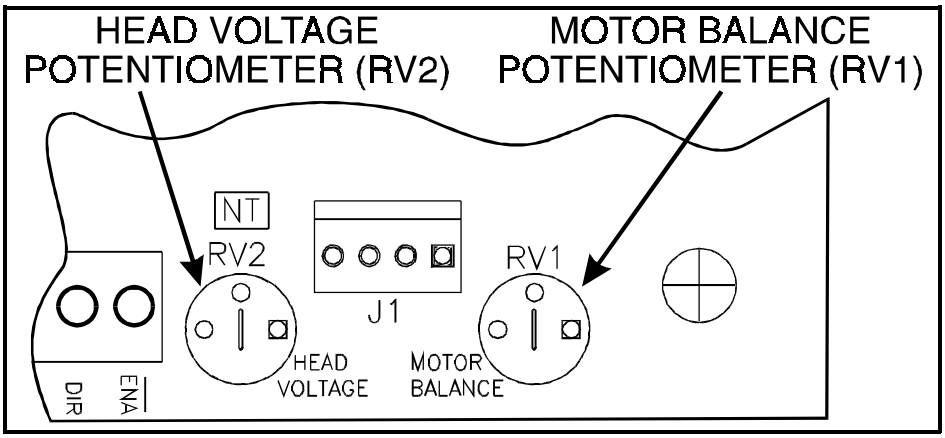

Figure 5.27 Motor Balance Potentiometer

Motor Balance Procedure

A potentiometer (RV1) is mounted on the printer's Power Supply Board that will balance the current traveling to both phases of the stepper motor. Proper balance of this current is essential in order to achieve optimum print quality and minimize resonance.

1. Print at 2 inches/sec (Speed A).
2. Turn the potentiometer (RV1) until the printer is at minimum resonance. See Figure 5.26. This minimum resonance point may be detected by ear or by placing your hand on the printer. At this point the printer is approximately balanced, it is now necessary to fine-tune this adjustment.
3. Print the following label format on the printer.

```
^XA ^PRA ^LHO, 20 ^FS
^F0190, 610 ^GB410, 0, 2 ^FS
^F0190, 615 ^GB410, 0, 2 ^FS
^F0190, 620 ^GB410, 0, 2 ^FS
^F0150, 730 ^GB490, 0, 2 ^FS
^F0150, 735 ^GB490, 0, 2 ^FS
^F0150, 740 ^GB490, 0, 2 ^FS
^F0110, 850 ^GB570, 0, 2 ^FS
^F0110, 855 ^GB570, 0, 2 ^FS
^F0110, 860 ^GB570, 0, 2 ^FS
^F070,   970 ^GB650, 0, 2 ^FS
^F070,   975 ^GB650, 0, 2 ^FS
^F070,   980 ^GB650, 0, 2 ^FS
^F030, 1090 ^GB730, 0, 2 ^FS
^F030, 1095 ^GB730, 0, 2 ^FS
^F030, 1100 ^GB730, 0, 2 ^FS
^PQ10 ^XZ
```

4. This label format consists of a horizontal line that is two dot rows thick separated by 5 vertical dots. When the motor is not balanced, the angular rotation that the motor rotates per step is not equal thus causing a large or small step increment. An incorrect step size will cause the separation between dot rows to be inconsistent which can be seen in Figure 5.12.
5. The motor potentiometer should be rotated until the label format approaches the quality of the label found in Figure 5.27.

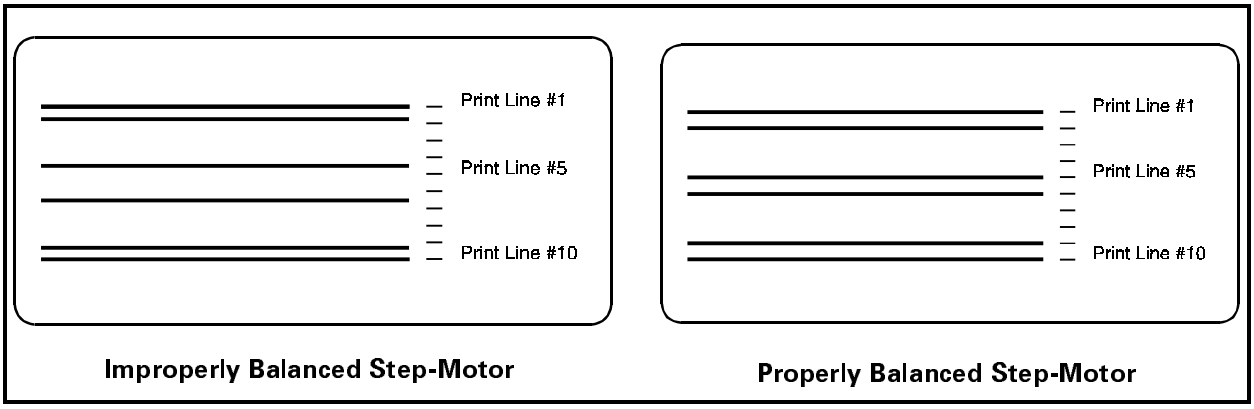

Figure 5.28 Motor Balance Test Printouts

Power Supply Removal

Follow the procedure below for removing the Power Supply.

1. Turn the printer OFF and remove the power cord.
2. Remove the Rear Cover, Front Control Panel Assembly, Media Sensor Board and Main Logic Board.
3. Disconnect the Power Supply ground strap (part # 44523) from the Ground Bar.
4. Remove the screw (part # 44484) in the middle of the media compartment which holds the main base and power supply base together. **See Platen and Power Supply drawing in Section 7.**
5. Press the mounting snaps in from back of the base and remove the Power Supply Base Assembly by lightly prying from the rear.
6. Disengage the rear snap holding the circuit board onto the base.
7. Remove the two mounting screws which secure the Power Supply to the Base.
8. Pivot the board off of the front snaps.

Power Supply Replacement

1. Press the Power Supply Board onto the three (3) mounting snaps. **See Platen and Power Supply drawing in Section 7.**
2. Reinstall the two (2) 5mm Hex or #2 Phillips screws.
3. With the printer tilted up on the front covers, position front hooks in holes.
4. Position the ground cable near or through the opening in the base.
5. Engage the rear snaps by pivoting the base assembly parts together.
6. Insert the Hex/Phillips mounting screw through the base and tighten.
7. Connect the ground strap with the #2 Phillips screw.
8. Replace the Main Logic Board, Media Sensor Assembly, Front Control Panel Assembly and Rear Cover.
9. Perform the Printhead Voltage Adjustment, page 5-20.

AC Power Fuse Replacement

CAUTION: Turn the printer's AC Power Switch OFF and disconnect the printer's AC Power Cable before replacing the Fuse.

A User replaceable AC Power Fuse is located just to the left of the Power ON/OFF Switch. For a 110 VAC installation, the replacement Fuse is a 3AG Fast Blow style rated at 5 Amp/250VAC. For a 220 VAC installation, the Fuse is the same style but rated at 3 Amp/250VAC.

To replace the Fuse, follow the **CAUTION** above, then insert the tip of a flatblade screwdriver into the slot designed into the Fuse Holder's End Cap. Press in slightly on the End Cap and turn the screwdriver slightly to the left. This will disengage the End Cap from the Fuse Holder and permit removal of the Fuse. To install a new Fuse, reverse the sequence.

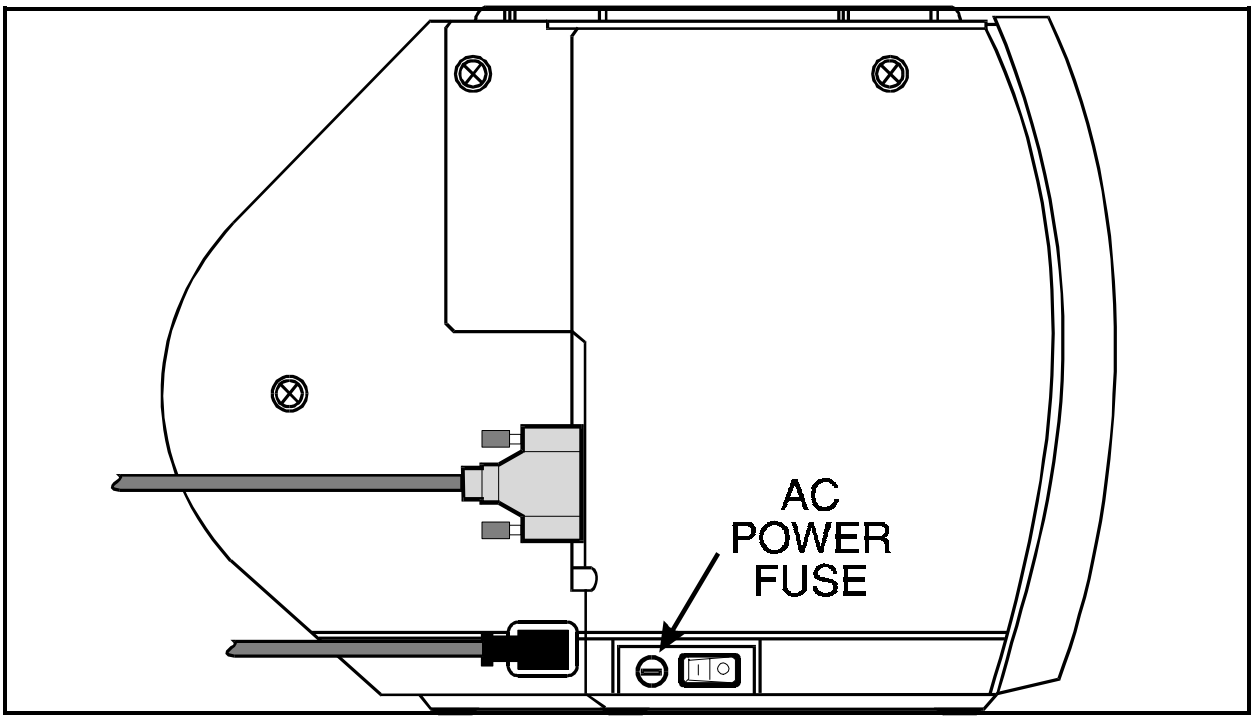

Figure 5.29 AC Power Fuse Location

Battery Replacement

One of the Factory Installed Options for the S-500 Printer is the Battery Backed-Up 256K RAM Memory. The Battery used with this option is a 3 VDC Lithium Coin Battery type CR2477 (part # 44641).

The Battery is located on the Main Logic Board of the Printer. It is recommended that a qualified service technician replace this Battery since internal access to the electronics area of the printer is required.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended. When discarding used batteries, do not incinerate.

CAUTION: Turn the printer's AC Power Switch OFF and disconnect the printer's AC Power Cable before replacing the Battery.

CAUTION: Prior to removing and replacing the Battery, observe proper electrostatic and electrical safety precautions.

To remove the old Battery, gently raise the left edge and slide the Battery to the left and out of the Battery Holder.

Insert the new Battery with the Negative (-) side toward the Circuit Board. The Positive (+) side should be visible when the Battery is correctly installed.

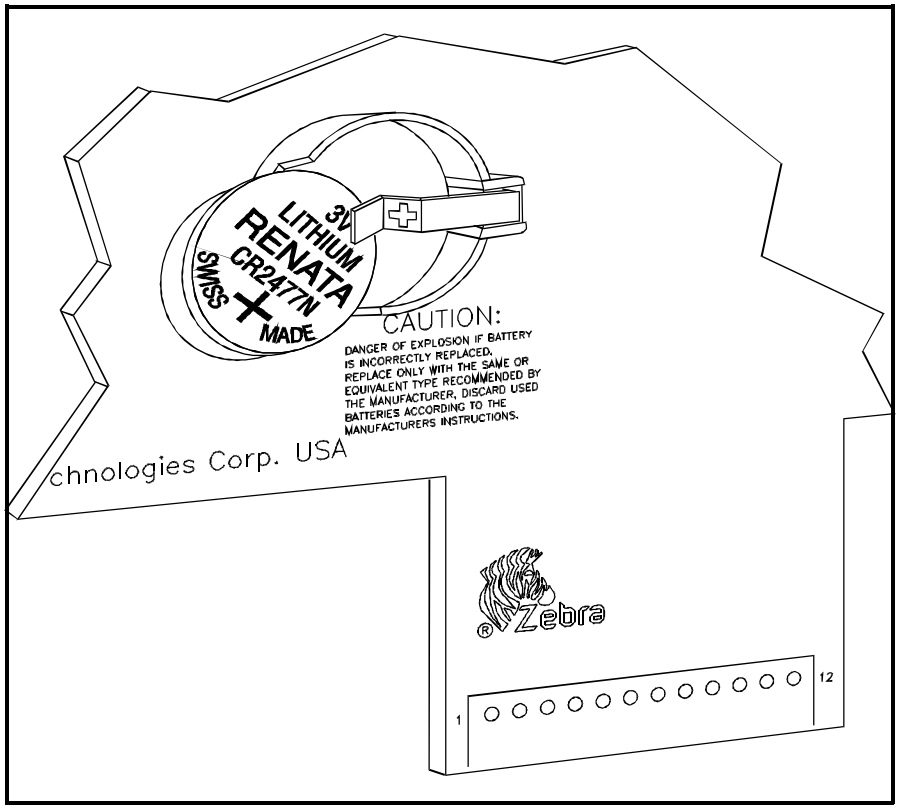

Figure 5.30 Battery Replacement

6 Troubleshooting

In this section... **Page**

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Sample Labels for Troubleshooting 6-5
Factory Assistance..... 6-10
Returning Equipment..... 6-10

Troubleshooting Tables

Consult the following Troubleshooting Tables and compare the printer output to the sample labels provided on the following pages to improve the quality of your labels.

SYMPTOM	DIAGNOSIS	ACTION
All lights never light.	No AC Power applied to the Printer.	Insure that the AC Power Cable is connected to a working voltage source.
	Faulty AC Power Fuse.	Replace Fuse.
	No voltage available from the internal Power Supply.	Replace Power Supply.
All lights turn ON and stay ON, or all lights (except POWER Light) never turn ON.	Main Logic Board or EPROM faulty or loose interconnecting cables.	Insure cables are properly connected, EPROMs are properly installed or replace the Main Logic Board.
CALIBRATE Light turns OFF after 5 sec but all other lights stay ON.	Main Logic Board Dynamic RAM failed.	Replace Main Logic Board.
CALIBRATE Light and POSITION Light OFF but all other lights ON.	FONT ROM error.	Replace Font ROM.
All lights Flash ON and OFF.	No significant amount of DRAM tested good.	Replace Main Logic Board.
All lights (except POWER Light) are OFF and no printer operation possible.	Printer misconfigured for Peel-Off Mode and Peel-Off Option not installed.	If Peel-Off Option is installed, check Take Label Sensor. If Peel-Off Option is not installed, check printer configuration and insure Peel-Off mode is not selected.
Printer locks up while running Power On Self Test.	An improper configuration was set.	Reload factory defaults. Then, set correct parameters.
	Main Logic Board failure.	Replace Main Logic Board.
Printer stops. PAPER/RIBBON Light Flashes and the PAUSE Light ON.	Media not loaded or incorrectly loaded.	Load media correctly.
	Misadjusted Media Sensor.	Check Media Sensor operation. Adjust if necessary. (Run Printer Calibration).

SYMPTOM	DIAGNOSIS	ACTION
Printer stops. RIBBON Light and PAUSE Light ON.	Ribbon not loaded or incorrectly loaded.	Load ribbon correctly.
	Ribbon Sensor not sensing ribbon that is loaded correctly. Misadjusted Ribbon Sensor.	Check Ribbon Sensor operation. Adjust if necessary. (Run Printer Calibration).
Printer stops. PRINTHEAD Light Flashes and PAUSE Light ON.	Printhead is not fully closed.	Close printhead completely.
	Printhead Open Sensor not detecting Flag OR Flag not in proper position.	Check Head Open Sensor and Flag for proper operation.
Printer stops and PRINTHEAD Light ON.	Printhead element is overheated.	Printer resumes printing when the printhead element cools.
Printer stops. PAUSE Light ON and PRINTHEAD Light Flashes.	Printhead is not fully closed.	Close printhead completely.
	Printhead Open Sensor not detecting its position flag.	Adjust the Printhead Open Sensor position.
Printer prints across web or in wrong position.	Loss of registration indicating a Media Sensor problem.	Adjust Media Sensor position and then, if needed, adjust the Media Sensor sensitivity.
	Printer set for continuous media, but non-continuous media is loaded.	Set printer for correct type of media.
For Peel-Off mode:	Improperly adjusted Media Edge Guides or Power Roller.	Reposition and adjust as necessary.
Dots missing in printed area of label.	Printhead element going bad. Print quality problems.	Check print quality. Replace printhead if symptoms persist.
Light vertical lines approx. 0.006" wide running through all labels.	Dirty printhead or ribbon rollers.	Clean printhead and ribbon rollers.
	Defective Printhead elements.	Replace printhead.
Short printed lines at 45 degrees to label edge on left or right side of label.	Too much Printhead pressure.	Reduce Toggle Pressure.
Continuous printing occurring with the PRINTHEAD Light ON.	Printhead under temperature.	Check print quality. Printhead will heat up by printing, or move printer to a warmer area.
Printer stops and PAUSE light turns ON.	Not enough memory to perform one of the functions shown below. Functions: 1. Download Graphics. 2. Creating Bitmap (not enough memory for length of label). 3. Building Format (label too complex).	You may do any of the following: 1. Check for proper Communication Configuration. 2. With PAUSE ON, use the “~HM” ZPL II Command to display the amount of memory free. 3. With PAUSE ON, press CANCEL to skip that label format and continue to the next one. 4. Cycle Power OFF and back ON to Clear printer memory and start again.

SYMPTOM	DIAGNOSIS	ACTION
Poor Print Quality.	Darkness too low.	Increase Print Darkness.
	Incorrect Media and Ribbon combination.	Replace Media or Ribbon.
	Printhead Adjustments incorrect.	Perform required adjustments.
Truncated print, no print, or FEED Key operates incorrectly while using non-continuous media.	Incorrect Media Sensor position or sensitivity.	Adjust Media Sensor.
	Label Length Parameter is set less than the actual label length.	Set the correct label length.
	Printer that is in Peel-Off mode was powered ON without media being properly loaded.	Load media correctly for Peel-Off mode.
	Printer is not calibrating media properly.	Perform Media Adjustments. Set value with the "^SS" ZPL II Command.
Long tracks of missing print on several labels.	Wrinkled ribbon.	See Wrinkled Ribbon in this Table.
	Print Element damaged.	Replace printhead.
Fine gray lines on blank labels at angles.	Wrinkled ribbon.	See Wrinkled Ribbon below.
Wrinkled ribbon.	Ribbon fed through machine incorrectly.	Load ribbon correctly.
	Incorrect Darkness setting.	Set the Darkness to the lowest setting possible for good print quality.
	Incorrect printhead pressure, balance, or position.	Set the pressure to the minimum needed. See Print Quality Adjustment and Printhead Pressure Adjustment procedures.
	Incorrect Dual-Tension Spindle setting.	Pull Spindle End-Cap out when using wide media to obtain normal (higher) tension.
	Media not feeding properly; it is walking from side to side.	Make sure the media path remains straight by positioning the Media Guide closer to the media.
	Strip Plate needs adjusting.	Perform adjustments.
	Ribbon Supply Spindle tension needs adjusting.	Perform adjustments.
	Printhead needs realigning with platen roller.	Perform adjustments.
	Ribbon Take-up Spindle tension needs adjusting.	Perform adjustments.
Light printing or no printing on the left or right side of the label.	Printhead pressure needs balancing.	Adjust balance. See Printhead Pressure Adjustment procedures.
Misregistration and Skips Labels.	Misadjusted Media Sensors.	Perform Media Sensor Adjustments.
	Improper Spindle Tensions.	Perform Spindle Adjustments.
	Improper ZPL II Format.	Correct the ZPL II Format.

SYMPTOM	DIAGNOSIS	ACTION
Misregistration and misprint of 1 to 3 labels.	Media was pulled when motor was not moving.	Open and close the printhead so that it calibrates to find the label length.
	Printer that is in Peel-Off mode was powered ON without media being properly loaded.	Load media correctly for Peel-Off mode.
	Misadjusted Media Sensor.	Place Media Sensor in the proper position.
Vertical drift in top-of-form registration.	Incorrect media loading or media sensor adjustments.	Reload media or adjust sensors as necessary.
	A plus or minus 4-6 dot row (approx. 1/2 mm) vertical drift is possible due to the different tolerances and printer modes.	Perform the “Tear-Off Position Setting” Front Panel command to correct.
Label jam in rear area of printhead.	Upper Media Plate needs cleaning.	Clean the Upper Media Plate.
In Peel-Off Mode, skewed or stuck labels.	Glue material from back of labels causing media movement problems.	Perform maintenance and cleaning of the printer.
	Media and backing not properly aligned in printer.	Reload media. Adjust the Power Roller if necessary.
In Cutter Mode, skewed or stuck labels.	Cutter is dirty.	Clean Cutter Module.
When using wide ribbon (over 2.4"), the image gets lighter or smears near the end of the roll of ribbon. Ribbon appears to slow down or stop.	Too much back-tension on the ribbon.	Adjust the Dual-Tension Ribbon Supply Spindle to provide low tension by pushing in the Spindle End-Cap.
Changes in parameter settings did not take effect.	All MODE Lights must be OFF before turning the power OFF.	Re-calibrate and wait until all MODE Lights turn OFF before turning the printer power OFF.
	A “^MPS” ZPL II Command disables Mode Function Save.	The “^MPE” ZPL II Command enables all Mode Functions to be Front Panel-programmable.
	If the problem continues, there may be a problem on the Main Logic Board.	Replace the Main Logic Board.
ZPL was sent to printer, but not recognized. Buffer light remains ON. DATA Light remains OFF.	Communications parameters are incorrect.	Print a Communications Diagnostic Label. Check for Format or Overrun Errors. Reset Communication parameters.
	Prefix and delimiter characters set in printer do not match the ones used in ZPL.	Set the characters in the printer to match ZPL format. If problem continues, check the ZPL format for changed ^CC, ^CT, and ^CD.
Labels are not being cut at all.	Cutter Option not available.	The Cutter Option is installed at the factory. Non-Cutter units are not retrofittable.
	Cutter Option not installed/enabled.	Check Cutter configuration.

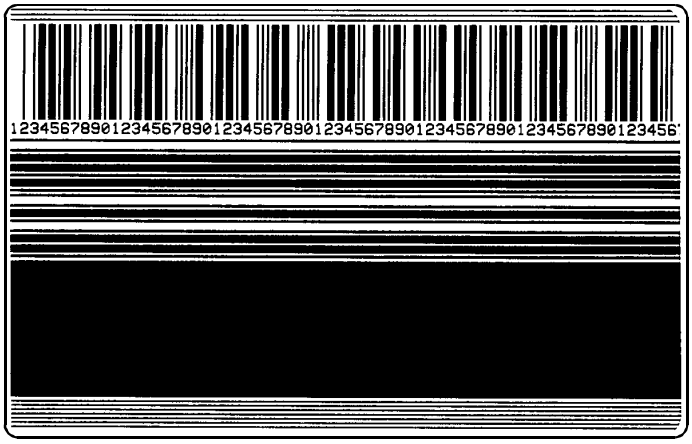
SYMPTOM	DIAGNOSIS	ACTION
The Cutter is not cutting labels cleanly.	Cutter is dirty.	Clean Cutter.
	Cutter blades are dull.	Replace Cutter Module.
The Cutter is jamming up with labels or labels are being cut more than once.	Cutter is dirty.	Clean Cutter.
	Label length is too short.	Increase label length.
Printing stops. PAPER/RIBBON, PAUSE, and CANCEL Lights are ON.	Out of media.	Load media.
	Cutter: Media jammed in Cutter.	Remove media, clean Cutter Module if necessary.
	Cutter: Connecting cable not connected to Cutter Module.	Plug Cable into Cutter Module.
	Cutter: Cutter Module is dirty.	Clean Cutter Module.
	Cutter: End of the media not positioned correctly on top of Platen.	Re-position media so that the end is on top of the Platen.
	Cutter: If condition persists, replace Cutter Module.	Replace Cutter Module.

Sample Labels for Troubleshooting

The following pages contain sample labels to be used with the preceding troubleshooting charts. These labels illustrate conditions which could be seen if mechanical adjustments are necessary.

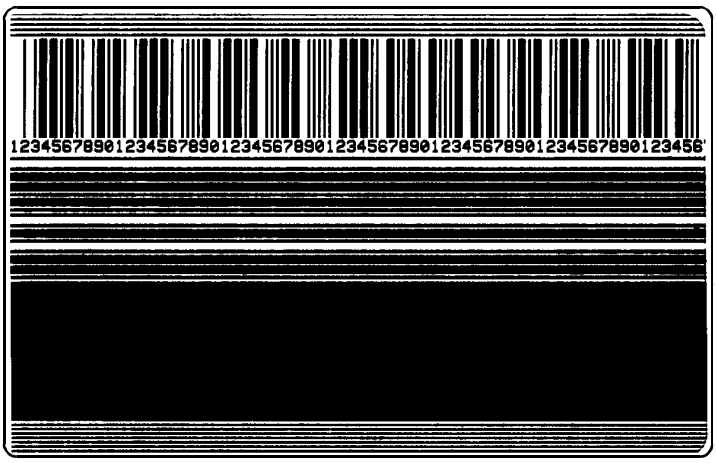
Zebra type 3P Media Stock and type 5319 Ribbon were used to obtain these labels. Any other Label and Ribbon stock combinations may produce sample labels with similar but not necessarily the same indications.

The size of these example labels has been adjusted to permit good visibility of the effects of the mechanical problem being illustrated.



Acceptable Label:

- Darkness properly set
- Printhead positioned correctly
- Toggles balanced (equal pressure on left and right sides)

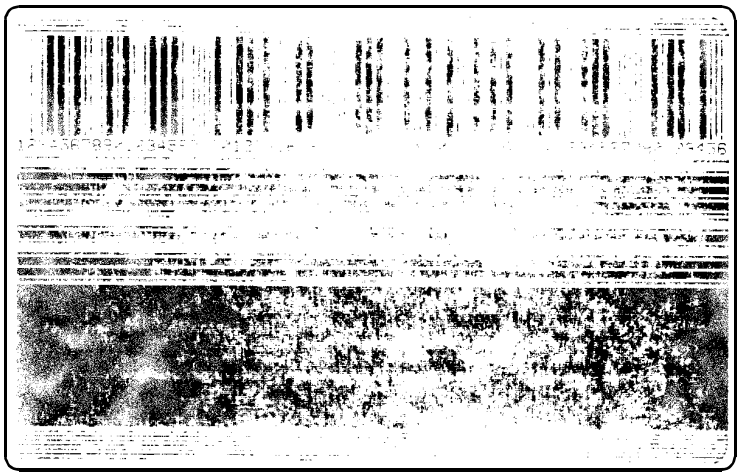


Unacceptable Label:

- Darkness too high
- Printhead positioned correctly
- Toggles balanced (equal pressure on left and right sides)

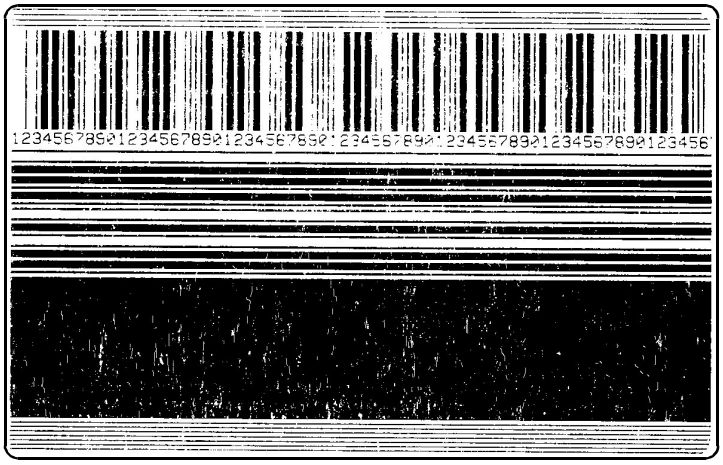
Unacceptable Label:

- Darkness low
- Printhead positioned correctly
- Toggles balanced (equal pressure on left and right sides)



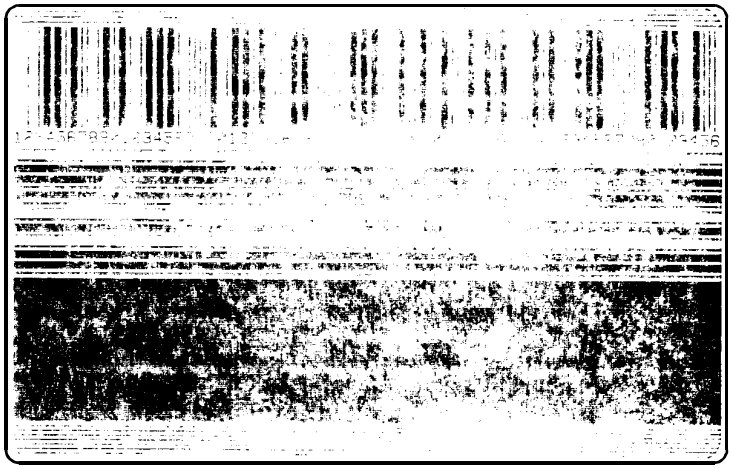
Unacceptable Label:

- Darkness very low
- Printhead positioned correctly
- Toggles balanced (equal pressure on left and right sides)



Unacceptable Label:

- Darkness properly set
- Printhead too far forward
- "Scratch flowers" on black area (foggy appearance): printhead needs to be moved rearward
- Walk out wrinkle with feed button and readjust
- Toggles balanced (equal pressure on left and right sides)

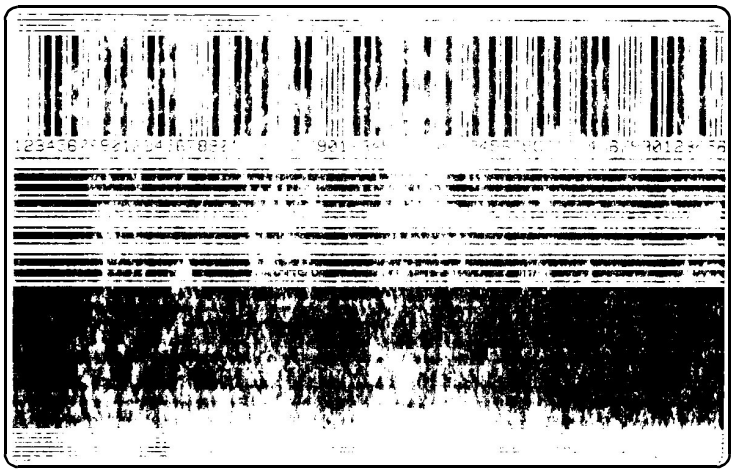


Unacceptable Label:

- Darkness properly set
- Printhead way too far forward
- "Scratch flowers" on black area (washed out appearance)
- Printhead needs to be moved rearward
- Walk out wrinkle with feed button and readjust
- Toggles balanced (equal pressure on left and right sides)

Unacceptable Label:

- Darkness properly set
- Printhead too far back
- Breakup on trailing edges of bars (opposite the direction of movement)
- Black is splotchy
- Printhead needs to come forward on both sides
- Toggles balanced (equal pressure on left and right sides)



Unacceptable Label:

- Darkness properly set
- Printhead way too far back
- Breakup on trailing edges of bars (opposite the direction of movement)
- Black is splotchy
- Printhead needs to come forward on both sides
- Toggles balanced (equal pressure on left and right sides)

Unacceptable Label:

- Darkness properly set
- Printhead position correct on right side, but way too far back on left side
- Noisy printing (breakup on trailing edges of horizontal bars - splotchy on left side)
- Toggles balanced (equal pressure on left and right sides)

Unacceptable Label:

- Darkness properly set
- Printhead position correct on left side, way too far back on right side
- Noisy printing (breakup on trailing edges of horizontal bars - splotchy on right side)
- Toggles balanced (equal pressure on left and right sides)

Unacceptable Label:

- Darkness properly set
- Printhead position correct on left side, too far forward on right side
- Noisy printing (breakup on leading edges of horizontal bars - splotchy on right side)
- Toggles balanced (equal pressure on left and right sides)

Unacceptable Label:

- Darkness properly set
- Printhead position correct on right side, way too far forward on left side
- Noisy printing (breakup on leading edges of horizontal bars - splotchy on left side)
- Toggles balanced (equal pressure on left and right sides)

Factory Assistance

If you encounter any problem which cannot be corrected with the aid of this manual, contact Technical Support immediately to minimize or avoid printer downtime. Technical Support can also assist in determining if the printer should be returned for repair.

Contact Zebra Technical Support:

Technical Support

Zebra Technologies Corporation
333 Corporate Woods Parkway
Vernon Hills, Illinois 60061-3109

Phone: (708) 913-2259
after Jan. 1996: (847) 913-2259
Fax: (708) 913-2578
after Jan. 1996: (847) 913-2578

Zebra Technologies Europe Limited
Zebra House, The Valley Centre,
Gordon Road, High Wycombe
Buckinghamshire HP13 6EQ, UK

Phone Number: +44 (0) 1494 472872
Telefax Number: +44 (0) 1494 450103

Returning Equipment

Should it become necessary to ship your printer, carefully pack the printer in a suitable container to avoid damage during transit. You must enclose a note describing the failure in as much detail as possible. Whenever possible, use the original shipping container. If other containers are used, a procedure similar to the original factory packaging should be followed

Enclose the unit in a protective, dust-proof bag and ensure that the unit floats in an outer carton of shock-absorbing material.

A Return Materials Authorization (RMA) number is required for all equipment being returned. Contact Zebra Technologies Corporation's Technical support to obtain an RMA number. Equipment returned for service without prior authorization may be refused.

CAUTION

Remove any ribbon and paper rolls from the Media Compartment, otherwise damage to the printer could result.

DO NOT package the printer in a rigid container without utilizing shockmounts or shock-absorbing packing material. A rigid container may cause damage to the printer by allowing shock on the outside to be transmitted undamped to the unit.

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7 Drawings and Parts Lists

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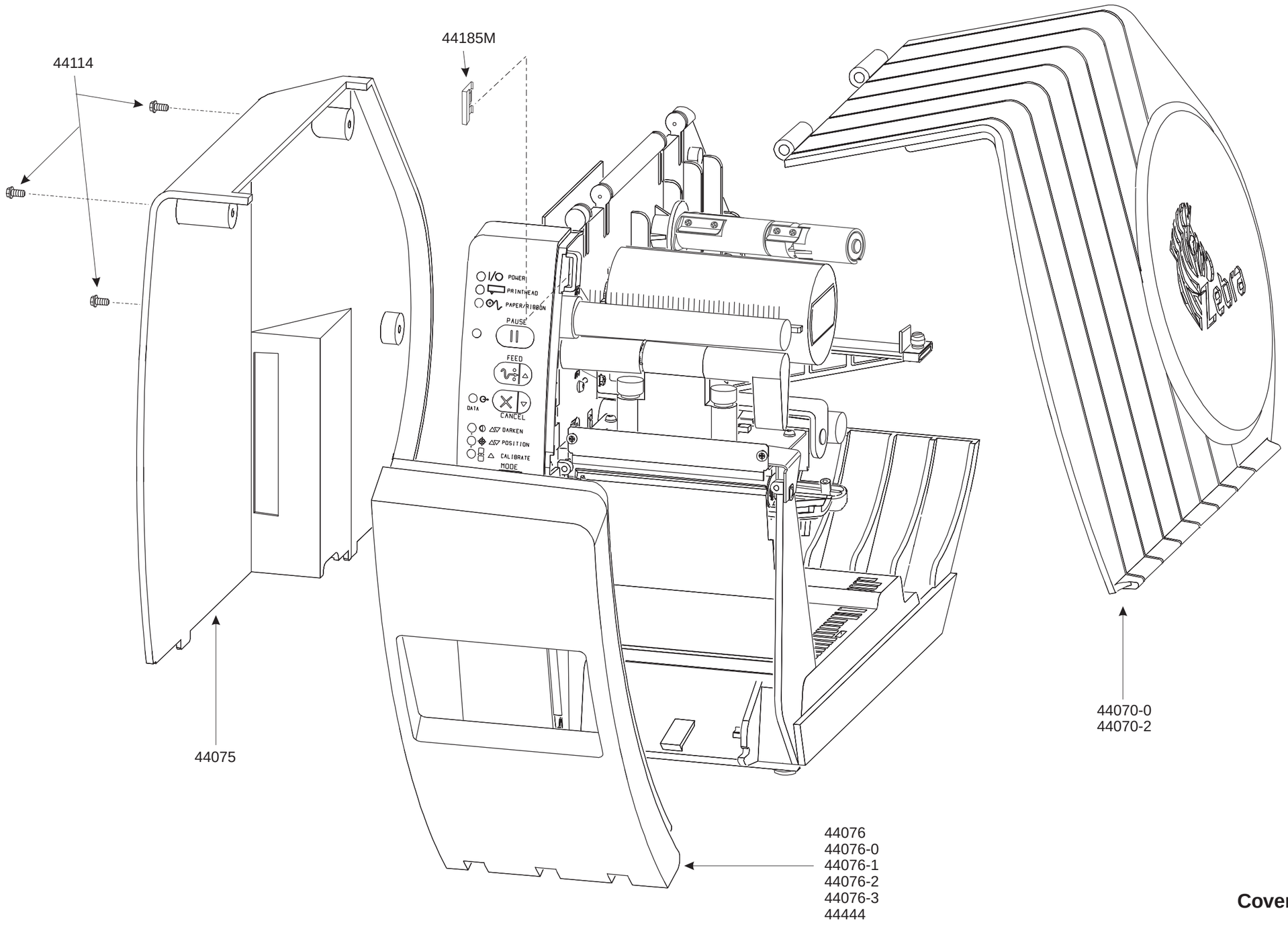
Mechanical Parts and Assemblies

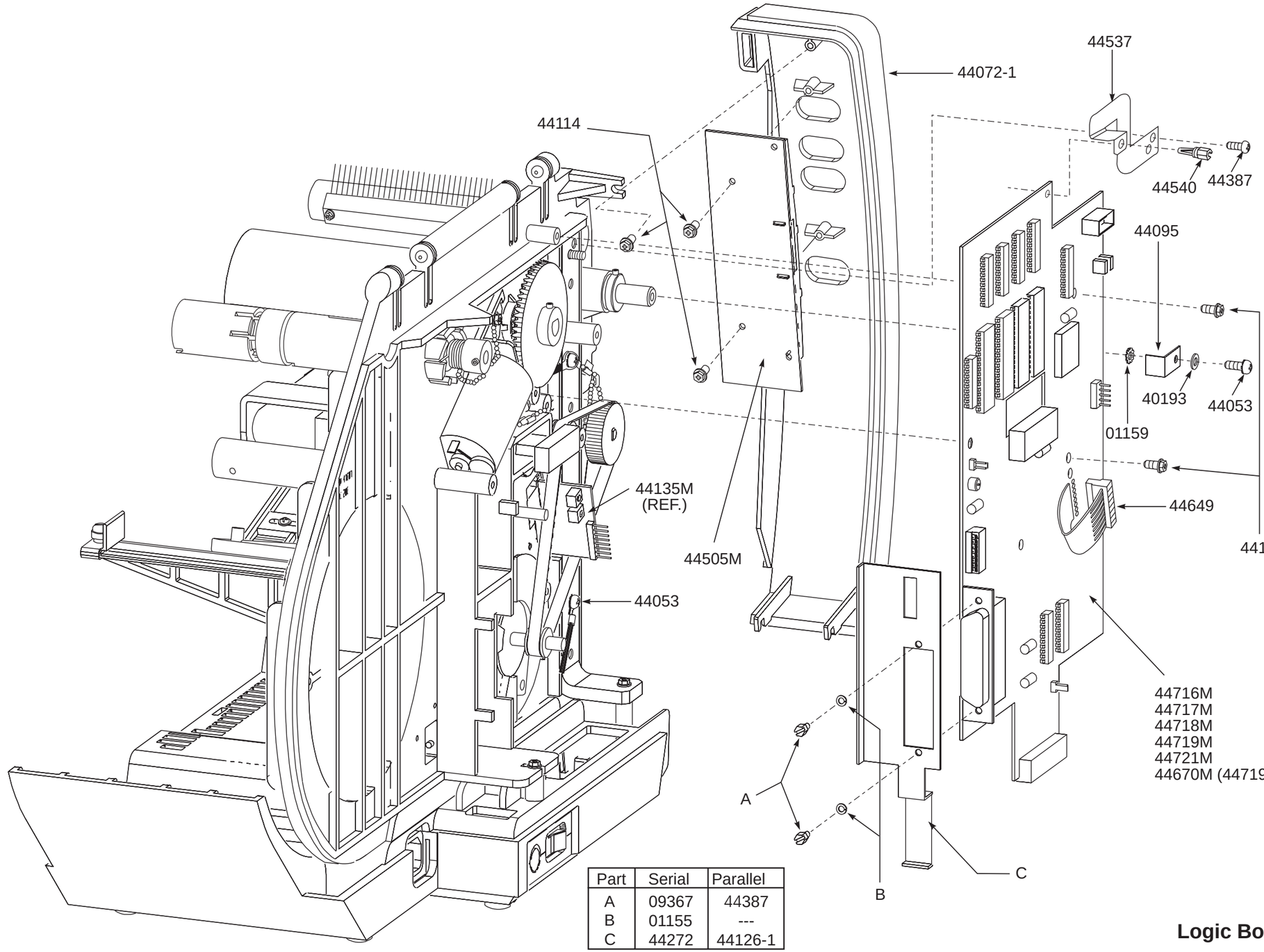
Use the mechanical assembly drawings when troubleshooting or replacing components and use the associated parts lists when ordering replacement parts.

Printer Model: Stripe				
Cover Assemblies				
PART NUMBER		DESCRIPTION		QUANTITY
44070-0		Main Door—Blank		1
44070-2		Main Door—With logo		1
44075		Rear Cover		1
44076		Front Door (Black w/Zebra and Stripe logos)		1
44076-0		Front Door (White w/no logos)		1
44076-1		Front Door (White w/Zebra and Stripe logos)		1
44076-2		Front Door (Black w/no logos)		1
44076-3		Front Door (Gray w/Zebra logo only)		1
44114		Screw hi-lo short		3
44185M		Front door retention clip		1
44444		Front Door (Black w/logos for Cutter models)		1



Cover Assemblies

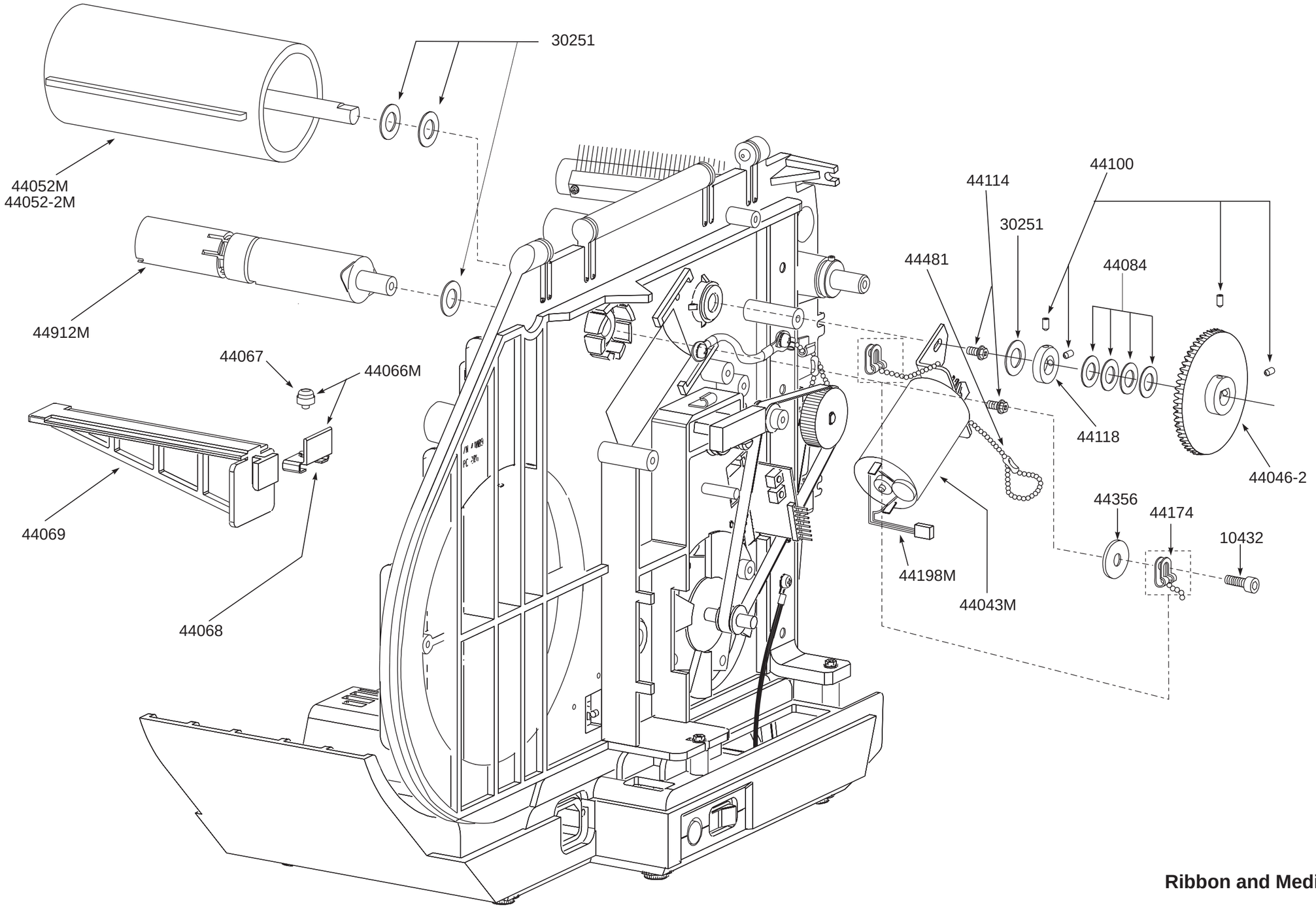
PRINTER MODEL: STRIPE				
Logic Board and Control Panel				
PART NUMBER		**DESCRIPTION**		**QUANTITY**
01155		Washer, Lock		2
01159		Washer, Lock, Star		1
09367		Hex Stand Off		2
40193		Washer, Flat		1
44053		Screw, M3.5 w/SEMS		1
44072-1		Cover, Control Panel (non-cutter)		1
44072-7		Cover, Control Panel (with Cutter)		1
44095		Sensor Arm, Head Open		1
44114		Screw, M4.2 x 1.41 x 8 Hi-Lo Hex/Phillips		5
44126-1		Bezel, Ground (Parallel)		1
44135M		Media Sensor Replacement Kit		1
44272		Bezel, Ground (Serial)		1
44387		Screws w/ SEMS for Parallel units		1
44505M		Control Panel		1
44537		Flat jumper, 2.9 X 1.9		1
44540		Spacer		1
44649		Stripe Main Logic to Sensor Connection		1
44670M		Main Logic Board (44530M) & Media Sensor (44135M) Replacement Maintenance Kit		1
44716M		Main Logic Board (S-300 Serial)		1
44717M		Main Logic Board (S-500 Parallel)		1
44718M		Main Logic Board (S-500 Parallel) (with Battery Backed-up RAM)		1
44719M		Main Logic Board (S-500 Serial) For printers up to S/N 500762, order Part 44670M.		1
44721M		Main Logic Board (S-500 Serial) (with Battery Backed-up RAM)		1



Part	Serial	Parallel
A	09367	44387
B	01155	---
C	44272	44126-1

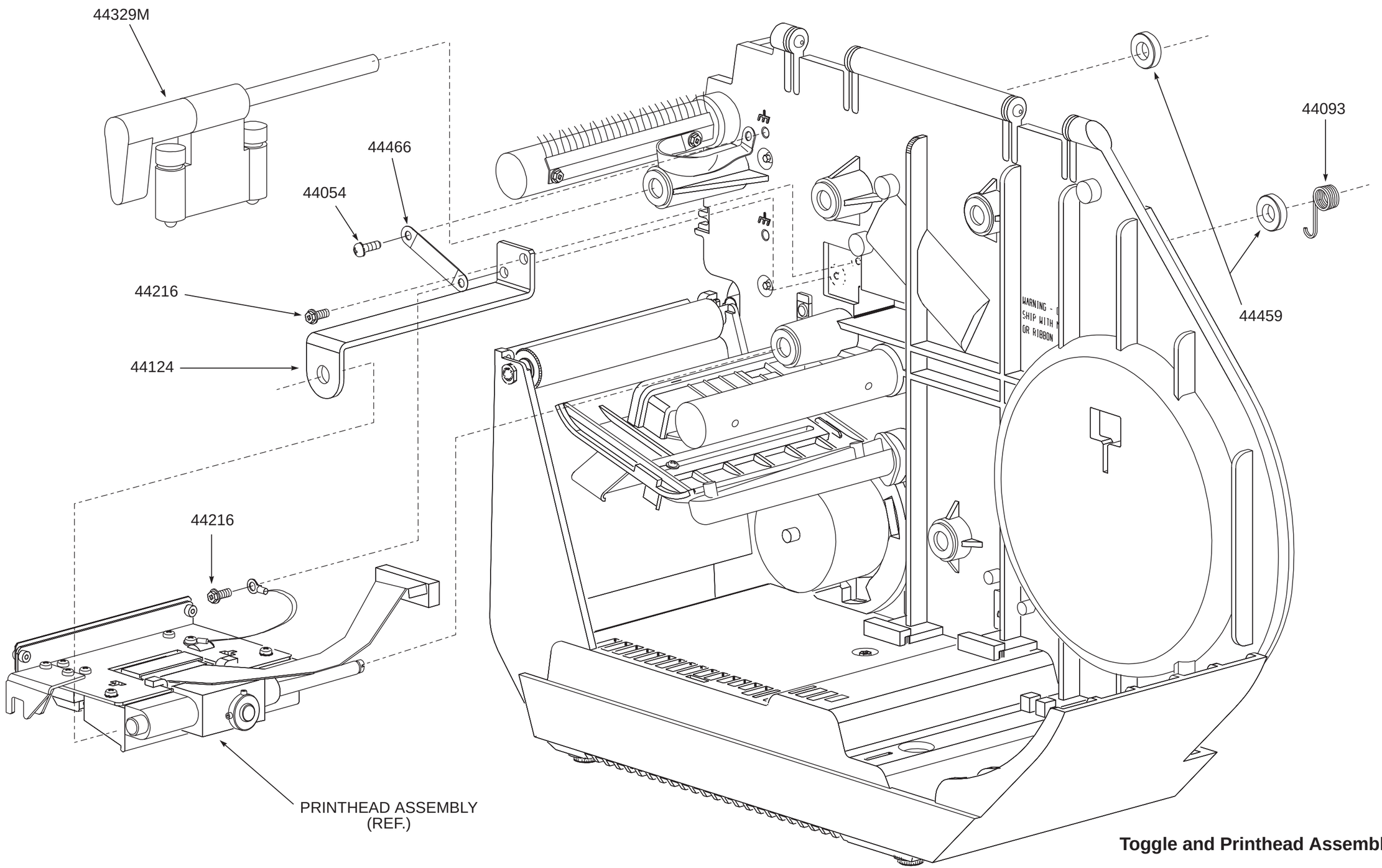
Logic Board and Control Panel

PRINTER MODEL: STRIPE				
Ribbon and Media Supply				
PART NUMBER		DESCRIPTION		QUANTITY
10432		Screw, M4		1
30251		Washer, Flat		4
44043M		Ribbon Tension Motor Assy. (Includes 44172-1, 44481)		1
44046-2		Gear, Bevel		1
44052M		Ribbon Take-Up Spindle Assy. (Non- Peel-Off)		1
44052-2M		Ribbon Take-Up Spindle Assy. (Peel-Off Option)		1
44066M		Media Supply Edge Guide Assy.		1
44067		Thumb Screw		1
44068		Edge Guide, Media		1
44069		Bracket, Media		1
44084		Washer, Flat		4
44100		Set Screw, Shaft Collar & Bevel Gear		6
44114		Screw, M4.2 x 1.41 x 8 Hi-Lo Hex/Phillips		2
44118		Shaft Collar		1
44174		Chain Clip		1
44198M		Cable, Ribbon Motor (also part of 44043M)		1
44278		Ground Chain Assy. (1 3/4")		1
44356		Flat Washer		1
44481		Ground Chain Assy. (1 3/8")		1
44912M		Dual Torque Ribbon Supply Spindle kit		1



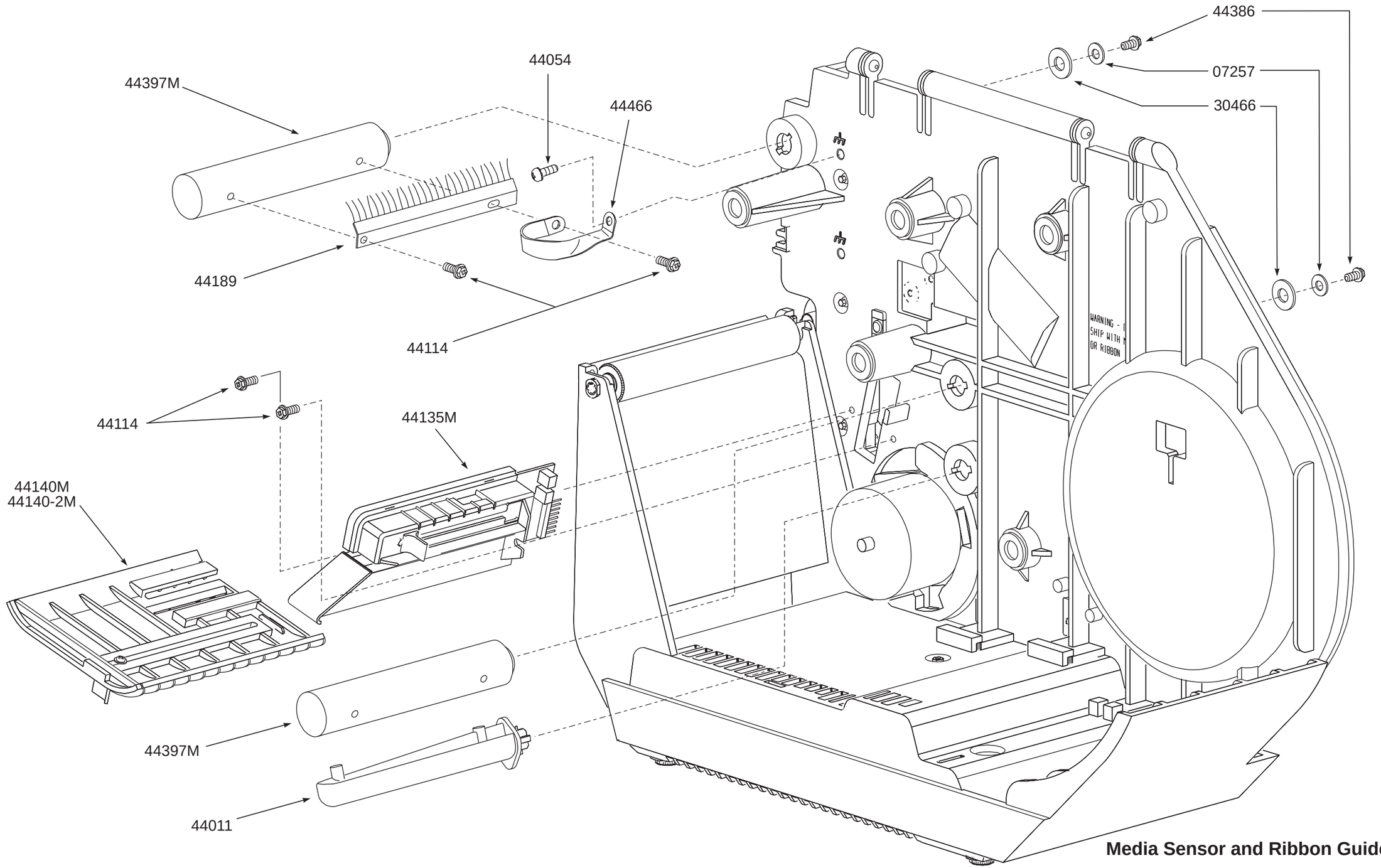
Ribbon and Media Supply

PRINTER MODEL: STRIPE				
Toggle and Printhead Assembly				
PART NUMBER		DESCRIPTION		QUANTITY
44030		Print Mechanism Assy. (w/o Printhead)		1
44054		Screw, M3.5 w/SEMS		1
44093		Spring, Head Open		1
44124		Support, Head Pivot		1
44216		Screw, M4.2 x 1.41 x 13 Hi-Lo Hex		2
44329M		Toggle Assembly		1
44459		Shaft Collar		2
44466		Ground Strap		1



Toggle and Printhead Assembly

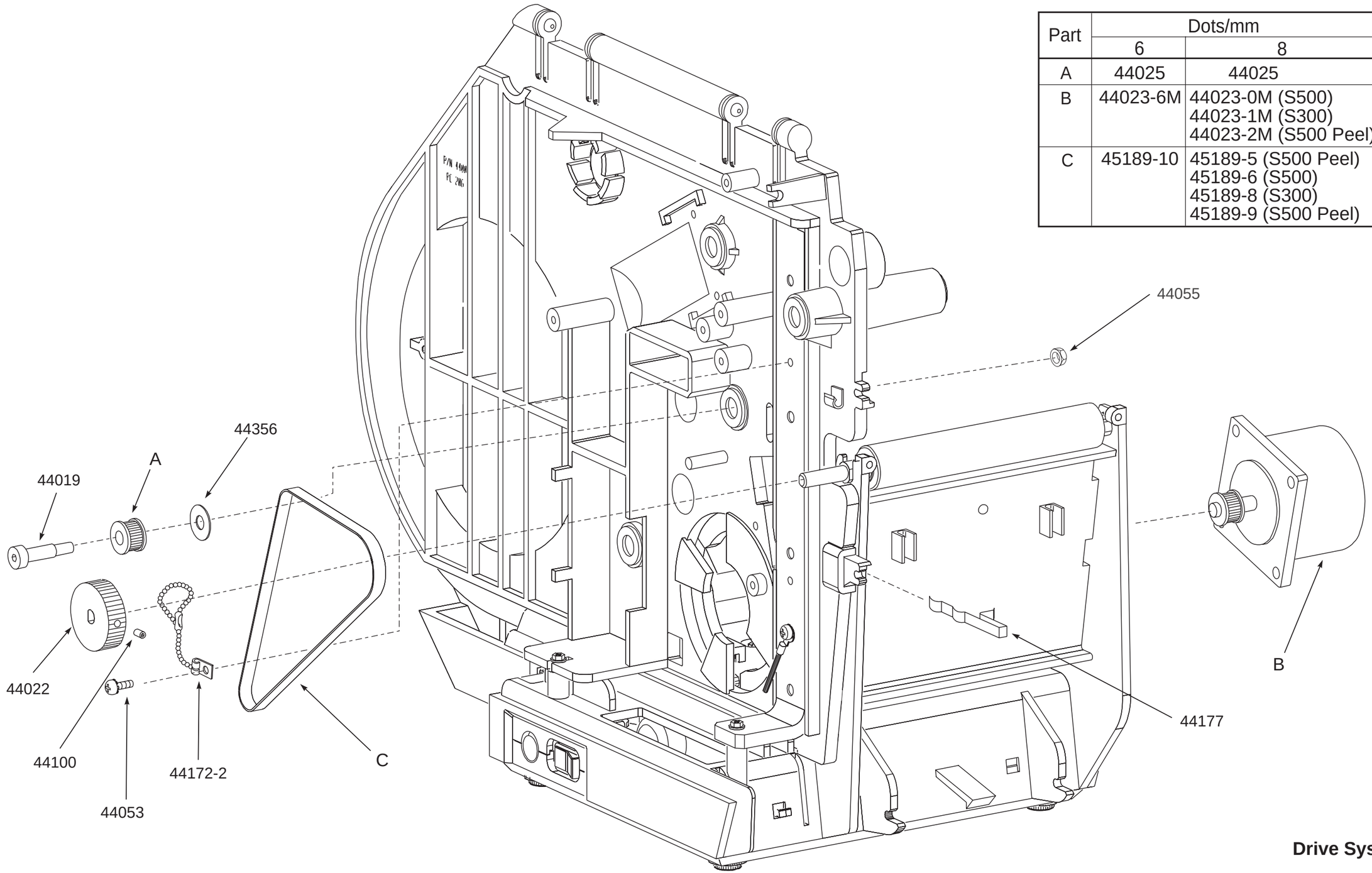
PRINTER MODEL: STRIPE				
Media Sensor and Ribbon Guides				
PART NUMBER		DESCRIPTION		QUANTITY
07257		Washer, Flat		2
30466		Washer, Flat		2
44011		Media Guide Bar		1
44054		Screw, M3.5 w/SEMS		1
44114		Screw, M4.2 x 1.41 x 8 Hi-Lo Hex/Phillips		4
44135M		Media Sensor Assembly		1
44140M		Upper Media Guide Assembly		1
44140-2M		Upper Media Guide Assembly (Peel-Off Option)		1
44189		Brush, Anti-Static		1
44386		Screw, .5" Allen		2
44397		Ribbon Guide		2
44466		Ground Strap		1



Media Sensor and Ribbon Guides

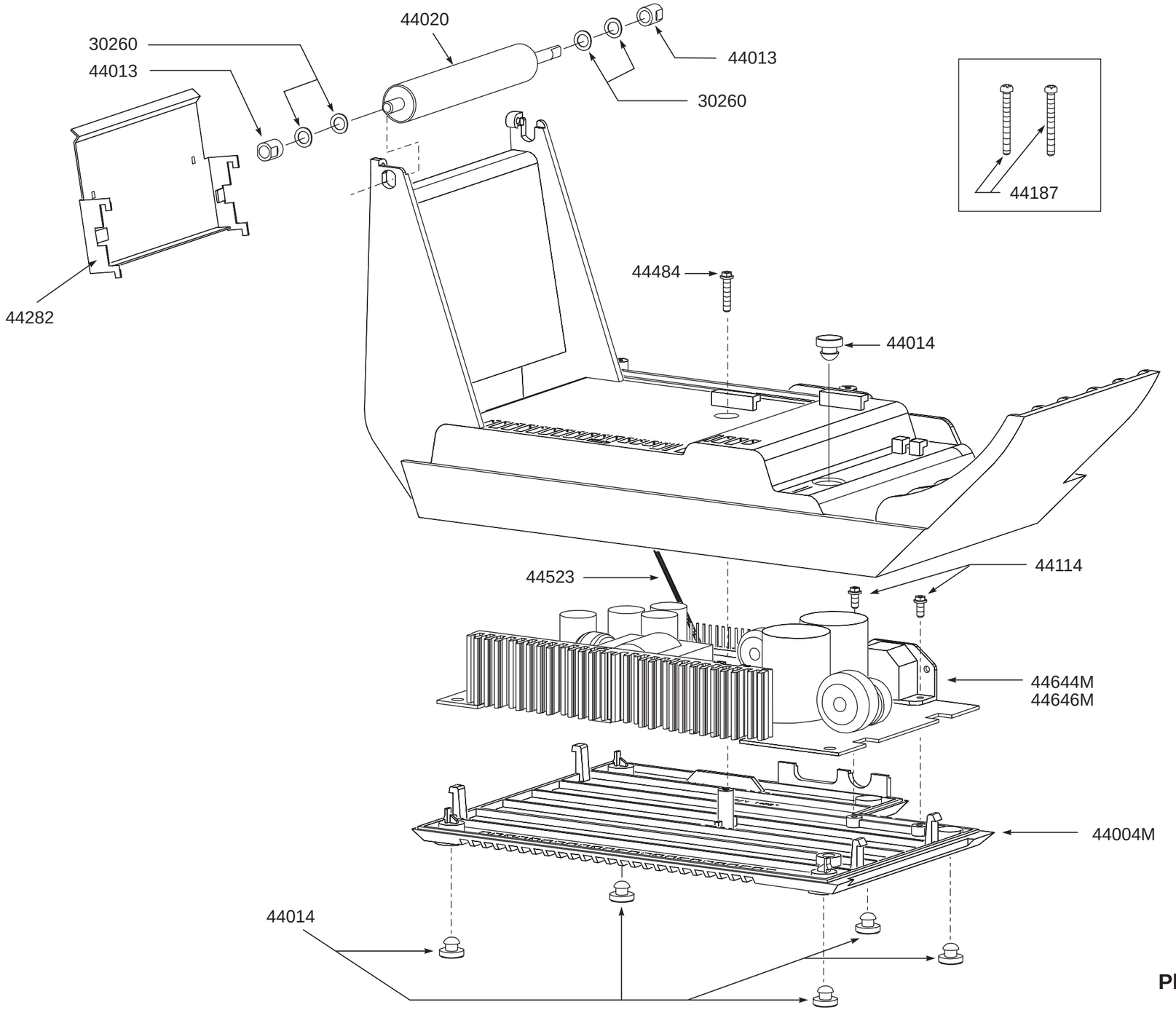
PRINTER MODEL: STRIPE				
Drive System				
PART NUMBER		DESCRIPTION		QUANTITY
44019		Idler Shaft		1
44022		Platen Pulley		1
44023-0M		Stepper Motor (S-500) (8 Dot/mm printer Non-Peel)		1
44023-1M		Stepper Motor (S-300)		1
44023-6M		Stepper Motor (S-500) (6 Dot/mm printer Non-Peel)		1
44025		Pulley 20T		1
44053		Screw, M3.5 w/SEMS		1
44055		Nut, M5 Hex		1
44100		Set Screw, Shaft Collar & Bevel Gear		1
44172-2		Ground Chain Assy. (1 1/8")		1
44177		Tearplate Ground Strap		1
44356		Washer, Flat		1
45189-6		S-500 Drive Belt (8 Dot/mm) (165 T)		1
45189-8		S-300 Drive Belt (160 T)		1
45189-10		S-500 Drive Belt (6 Dot/mm) (170 T)		1
***** For Peel-Off Option Parts refer to Pages 8-20 through 8-23***				

Part	Dots/mm	
	6	8
A	44025	44025
B	44023-6M	44023-0M (S500) 44023-1M (S300) 44023-2M (S500 Peel)
C	45189-10	45189-5 (S500 Peel) 45189-6 (S500) 45189-8 (S300) 45189-9 (S500 Peel)



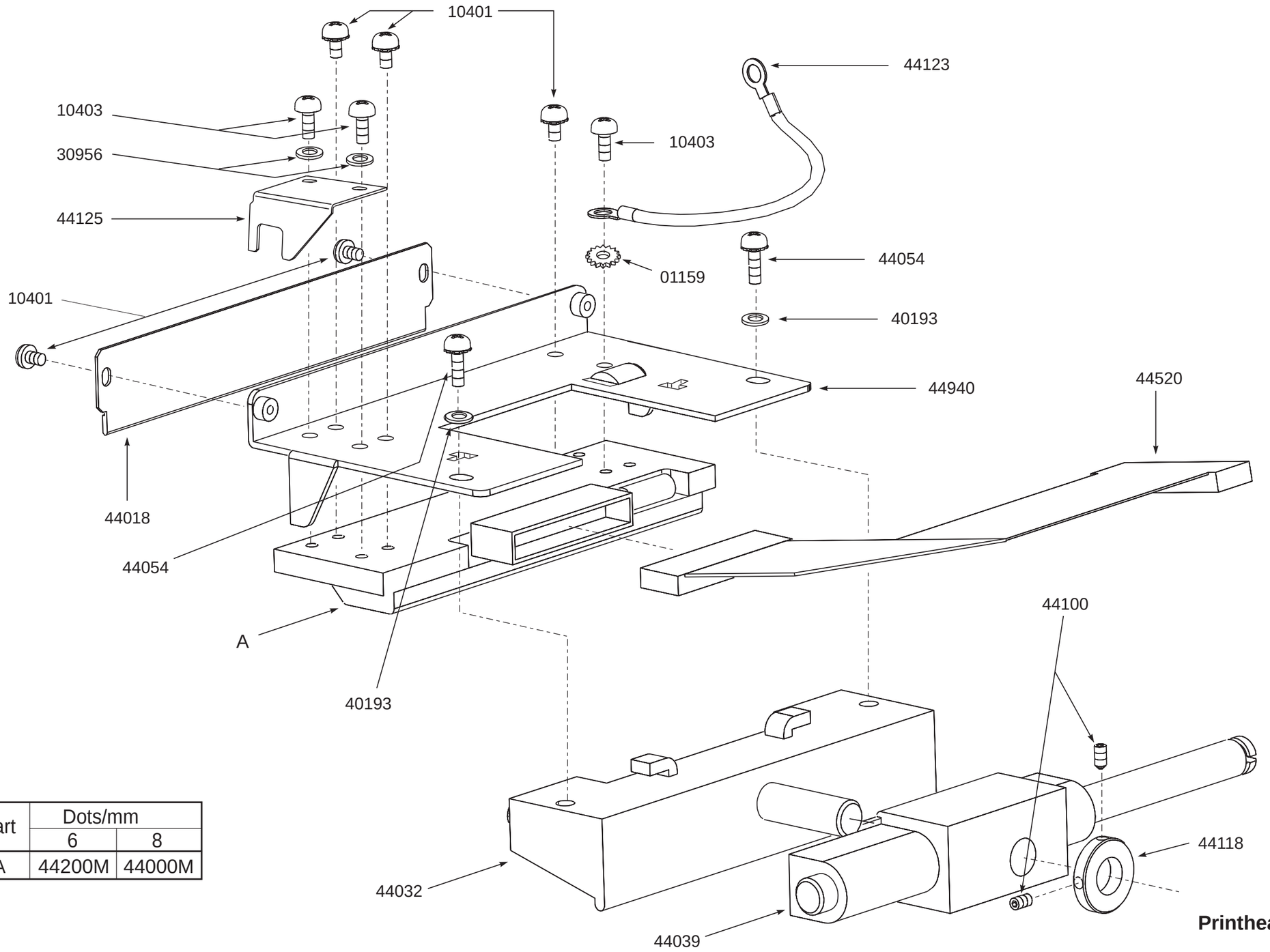
Drive System

PRINTER MODEL: STRIPE				
Platen and Power Supply				
PART NUMBER		DESCRIPTION		QUANTITY
30260		Washer, Wave .250		6
30261		Washer, Flat .250		2
44004		Power Supply Base		1
44013		Bearing, Platen		2
44014		Rubber Bumper		6
44020		Roller, Platen		1
44114		Screw, M4.2 x 1.41 x 8 Hi-Lo Hex/Phillips		2
44187		Screw, 6-20 2.0"		2
44282		Tear-Off Plate		1
44484		Screw, M4.2 x 1.41 x 25 Hi-Lo Hex		1
44523		Ground Cable, 12" (also part of Power Supply)		1
44542M		Power Supply Assembly (S-500) (Superceded by 44646M)		1
44644M		Power Supply Assembly (S-300)		1
44646M		Power Supply Assembly (S-500) (Supercedes 44542M)		1



Platen and Power Supply

PRINTER MODEL: STRIPE				
Printhead Assembly				
PART NUMBER		DESCRIPTION		QUANTITY
01159		Washer, Lock, Star		1
10401		Screw, M3 x .5 x 4		5
10403		Screw, M3 x .5 x 6		3
30956		Washer, Flat		2
40193		Washer, Flat		2
44000M		Printhead Element 8 Dot/mm (104mm)		1
44018		Ribbon Strip Plate		1
44032		Head Bracket (Includes Shaft)		1
44039		Head Pivot Arm (Includes Shaft & Bearing)		1
44054		Screw, M3.5 w/SEMS		2
44100		Set Screw, Shaft Collar & Bevel Gear		2
44118		Shaft Collar		1
44123		Ground Strap		1
44125		Printhead Support Bracket		1
44200M		Printhead Element 6 Dot/mm (104 mm)		1
44520		Cable Assembly		1
44940		Head Mounting Bracket		1

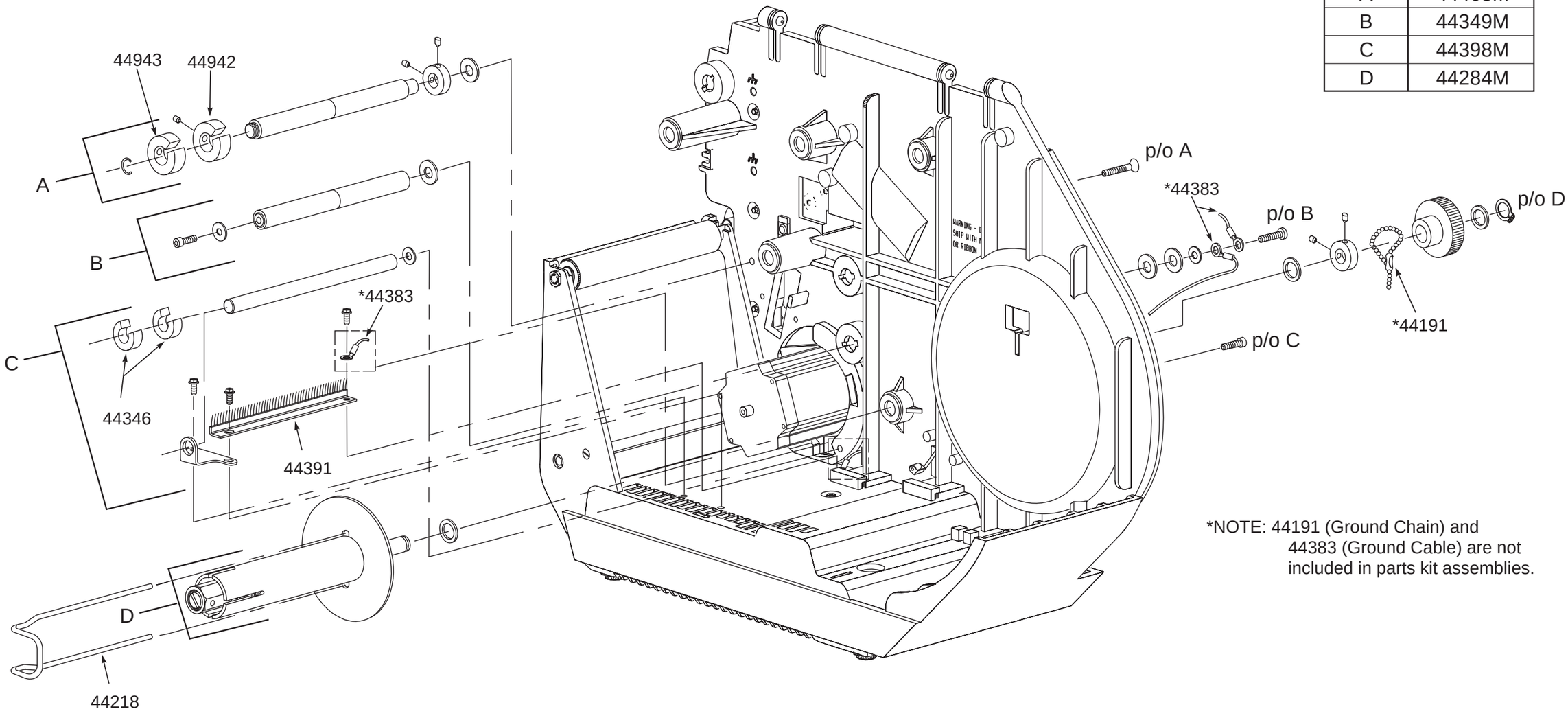


Part	Dots/mm	
	6	8
A	44200M	44000M

Printhead Assembly

PRINTER MODEL: STRIPE				
Peel-Off Option Front View				
PART NUMBER	REF.	DESCRIPTION		QUANTITY
44191		Ground Chain Assy. (5 1/16")		1
44218		Hook, Rewind		1
44284M	D	Media Take-Up Spindle Kit		1
44319M	E	Media Drag Rod Kit		1
44346		Lower Edge Guide (also p/o 44398M)		2
44349M	B	Upper Media Rod Kit		1
44383		Ground Cable		2
44391		Anti-Static Brush (also p/o Kit 44398M)		1
44396		Edge Guide (also p/o Kit 44463M)		2
44398M	C	Lower Guide Rod Kit		1
44463M	A	Platen Guide Rod Kit		1

ASSY	PART NO.
A	44463M
B	44349M
C	44398M
D	44284M

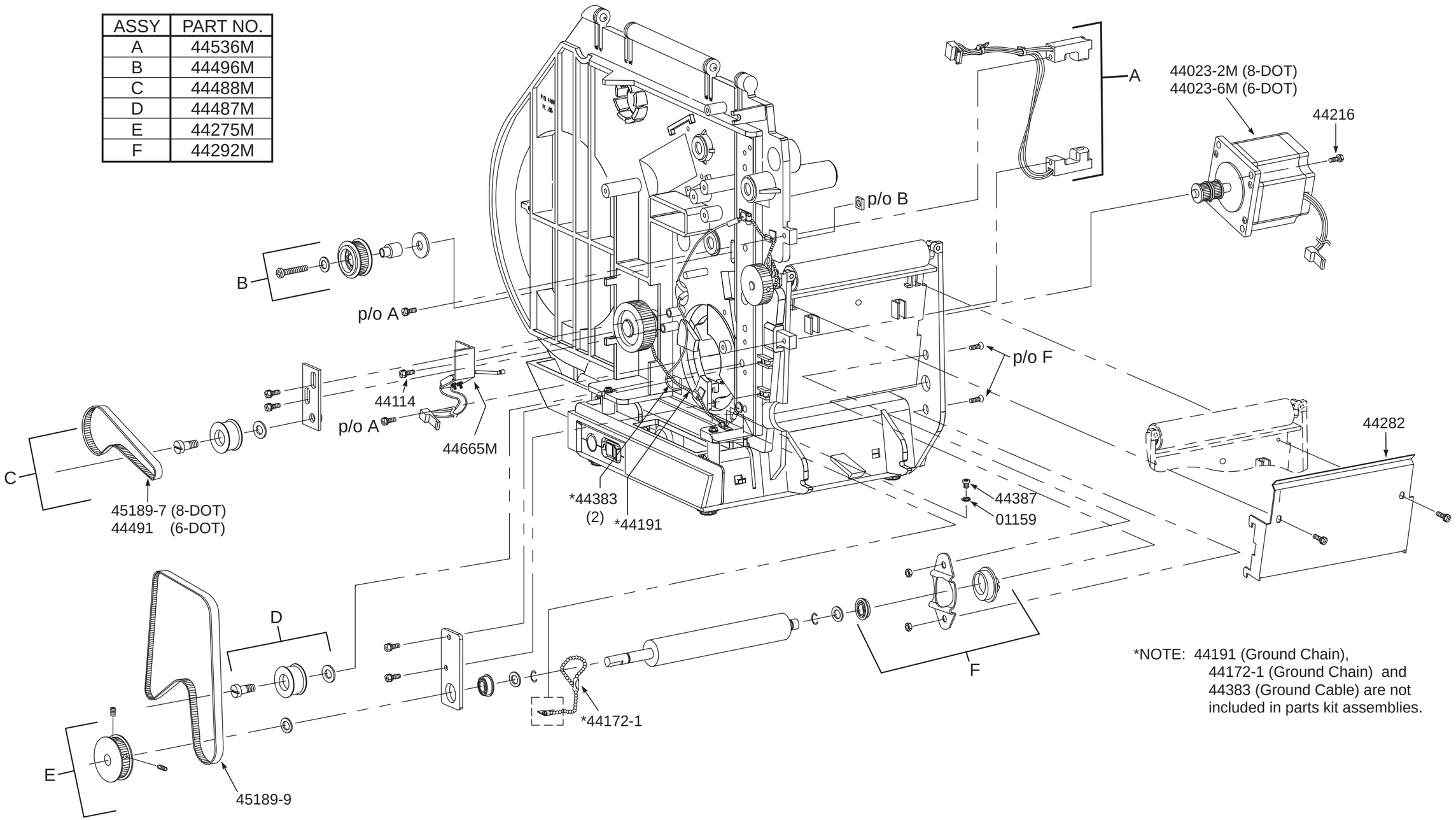


*NOTE: 44191 (Ground Chain) and 44383 (Ground Cable) are not included in parts kit assemblies.

Peel-Off Option: Front View

PRINTER MODEL: STRIPE				
Peel-Off Option Rear View				
PART NUMBER	REF.	DESCRIPTION		QUANTITY
01159		Washer, Lock, Star		1
01882		Screw, 4-40 Phillips		4
44023-2M		Stepper Motor (S-500) (8 Dot/mm printer w/Peel)		1
44114		Screw, M4.2 x 1.41 x 8 Hi-Lo Hex/Phillips		1
44172-1		Ground Chain Assy. (1 3/4")		1
44191		Ground Chain Assy. (5 1/16")		1
44216		Screw, M4.2 x 1.41 x 13 Hi-Lo Hex		1
44264M	F	Carrier Bearing Assembly Kit		1
44282		Tear-Off Plate		1
44283		Spacer, Tear-Off Plate		2
44331		Drive Belt (Peel-Off Option Only)		1
44341M	E	Power Roller Kit		1
44358M	C	Media Take-Up Idler Kit		1
44359M	B	Upper Idler Kit		1
44368M	D	Carrier Idler Kit		1
44371M	G	Roller Idler Kit		1
44383		Ground Cable (6")		2
44387		Screw, M3.5 w/SEMS		1
44536M	A	Sensor Assembly Kit, Take Label		1
44665		Switch Assy, Full Roll		1
45189-7		Media Rewind Belt		1

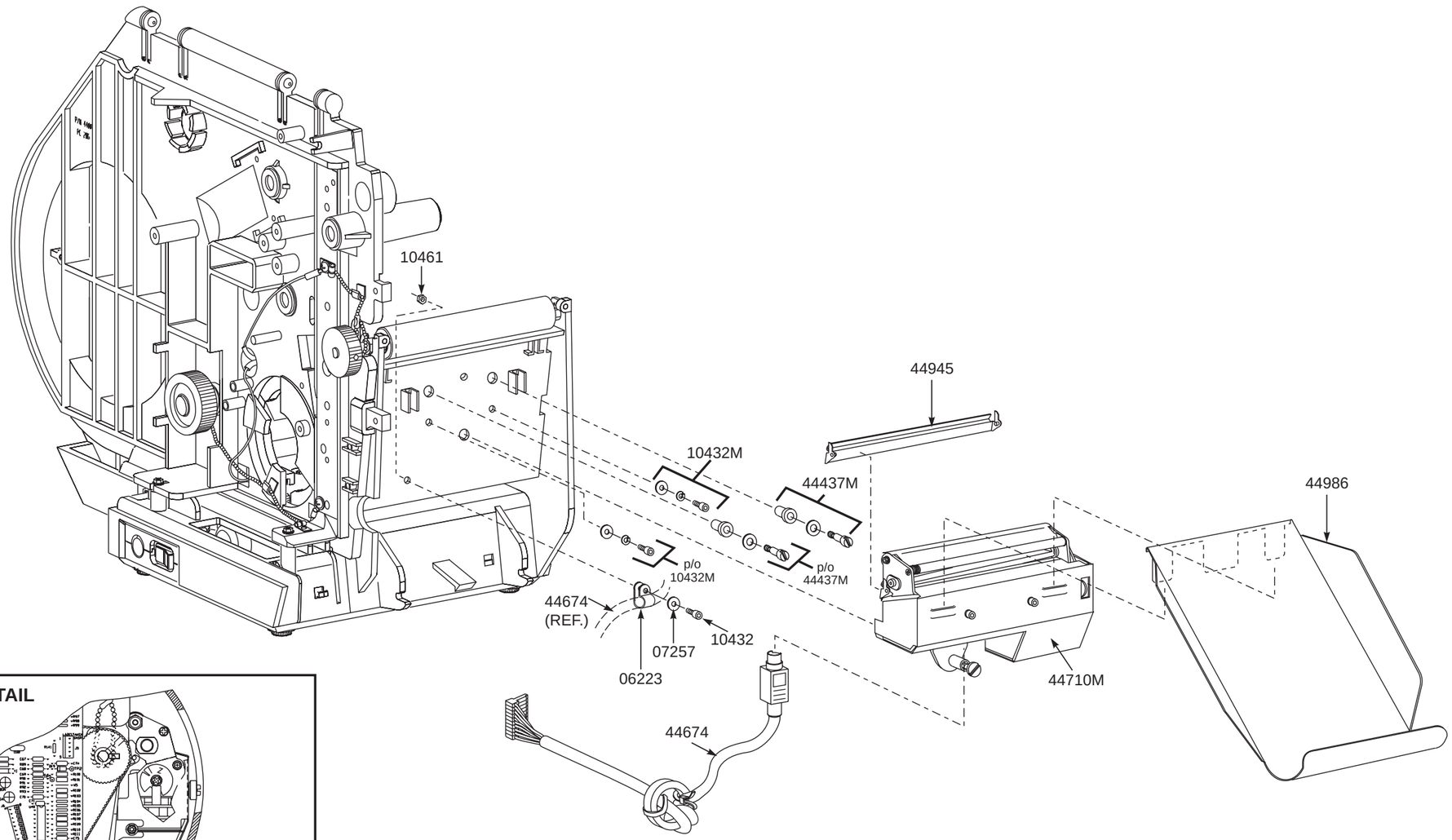
ASSY	PART NO.
A	44536M
B	44496M
C	44488M
D	44487M
E	44275M
F	44292M



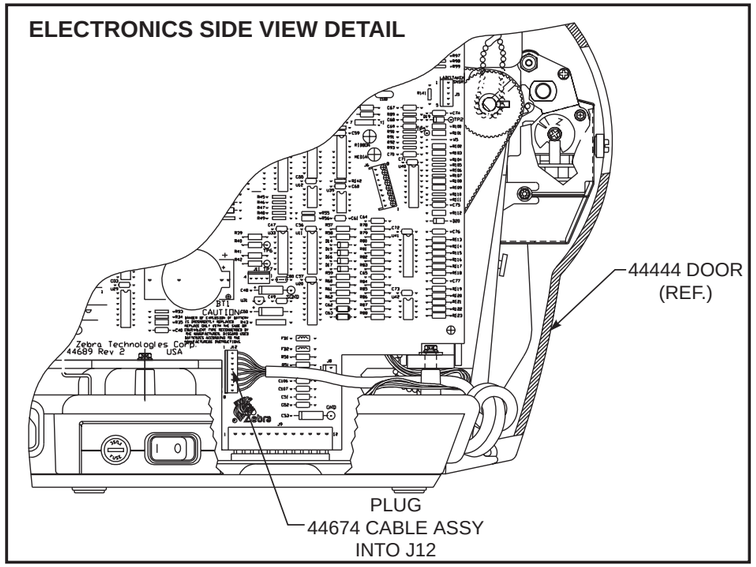
*NOTE: 44191 (Ground Chain), 44172-1 (Ground Chain) and 44383 (Ground Cable) are not included in parts kit assemblies.

Peel-Off Option: Rear View

PRINTER MODEL: STRIPE				
Cutter Option				
PART NUMBER		DESCRIPTION		QUANTITY
06223		Cable Clamp		1
07257		Flat Washer		1
10432		Screw, M4X.7 12 Cap		1
10432M		S-500 PLate Mounting Hardware Maintenance Kit		1
10461		Nut, M4-0.7		1
44437M		S-500 Cutter Mounting Hardware Maintenance Kit		1
44674		8-Conductor Circuilar Mini-DIN Cable		1
44945		Input Guide		1
44710M		S-500 Cutter Maintenance Kit		1
44986		Cutter Catch Tray		1



ELECTRONICS SIDE VIEW DETAIL



Cutter Option

Stripe®

8 Appendix

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Cable Requirements....8-1
110 VAC Applications....8-1
220 VAC Applications....8-1
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Setting Print Darkness....8-3

AC Power Cable Selection

Cable Requirements

The AC Power Cable has a three-prong female connector on one end. This Connector must be plugged into the mating connector on the left side of the Zebra Stripe Printer. See Figure 8.2.

110 VAC Applications

A Standard US style three-prong grounded male plug is attached to the other end of the AC Power Cable. This connector must be plugged into a nearby electrical outlet.

220 VAC Applications

The power cord may or may not have a male AC plug attached. The proper grounded AC power plug must be obtained and installed by the user. The cable must then be plugged into a nearby electrical outlet.

Part Number	AC Power Cable Description
44618	Detachable Power Cord (US Standard 3-Prong Plug - 110 VAC)
44629	Detachable Power Cord (Continental Europe 3-prong plug - 220 VAC)
44637	Detachable Power Cord (British 3-prong Plug - 220 VAC)

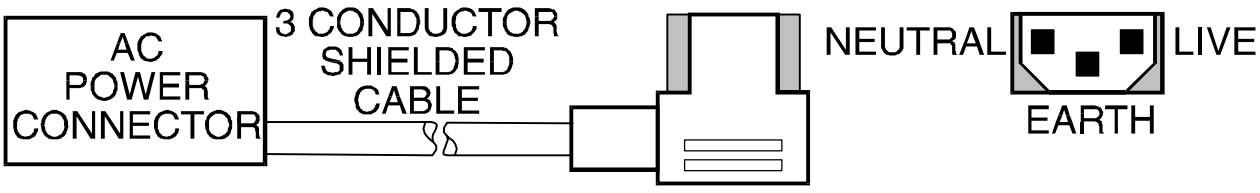

Figure 8.1 AC Power Cable

ASCII Code Chart

American Standard Code for Information Interchange

HEX	CHAR	HEX	CHAR	HEX	CHAR	HEX	CHAR
00	NUL	20	space	40	@	60	‘
01	SOH	21	!	41	A	61	a
02	STX	22	“	42	B	62	b
03	ETX	23	#	43	C	63	c
04	EOT	24	$	44	D	64	d
05	ENQ	25	%	45	E	65	e
06	ACK	26	&	46	F	66	f
07	BEL	27	’	47	G	67	g
08	BS	28	(	48	H	68	h
09	HT	29	)	49	I	69	i
0A	LF	2A	*	4A	J	6A	j
0B	VT	2B	+	4B	K	6B	k
0C	FF	2C	,	4C	L	6C	l
0D	CR	2D	-	4D	M	6D	m
0E	SO	2E	.	4E	N	6E	n
0F	SI	2F	/	4F	O	6F	o
10	DLE	30	0	50	P	70	p
11	DC1	31	1	51	Q	71	q
12	DC2	32	2	52	R	72	r
13	DC3	33	3	53	S	73	s
14	DC4	34	4	54	T	74	t
15	NAK	35	5	55	U	75	u
16	SYN	36	6	56	V	76	v
17	ETB	37	7	57	W	77	w
18	CAN	38	8	58	X	78	x
19	EM	39	9	59	Y	79	y
1A	SUB	3A	:	5A	Z	7A	z
1B	ESC	3B	;	5B	[	7B	{
1C	FS	3C	<	5C	\	7C	|
1D	GS	3D	=	5D	]	7D	}
1E	RS	3E	>	5E	^	7E	~
1F	US	3F	?	5F	_	7F	DEL

NOTE: NOT recommended for use as a ZPL II Command Prefix, Format Prefix or Delimiter Character

Setting Print Darkness

All direct thermal and thermal transfer materials do not have the same Print Darkness requirements. The best way to check for the proper Print Darkness is to use a bar code verifier that actually measures bars/spaces and calculates the PCS ratio. Without the assistance of a verifier, your eyes and/or the scanner to be used in the system, are the best bet for picking the optimum print darkness setting. On the next page is a simple yet effective method for adjusting the print darkness to print in spec bar codes. Examples are illustrated on the next page.

Overly Dark - Overly Dark labels are fairly obvious. The normal bar code bars increase in size, and the openings in small alphanumeric characters may fill in with ink. It may be readable but not in spec. Rotated bar code bars and spaces will run together.

Slightly Overly Dark - Slightly overly dark labels are not as obvious. The normal bar code will be in spec. Small character alphanumerics will be bold and could be slightly filled in. The rotated bar code spaces are small when compared to the in spec code, possibly making the code unreadable.

Slightly Overly Light - Slightly overly light labels are, in some cases, preferred to slightly overly dark for in spec bar codes. Both normal and rotated bar codes will be in spec, but small alphanumeric characters may not be complete.

Overly Light - Overly Light labels are very obvious. Both normal and rotated bar codes have incomplete bars and spaces. Small alphanumeric characters are unreadable.

In Spec - The in spec bar code can only be confirmed by a verifier, but it should exhibit some very visible characteristics. The normal bar code will have complete, even bars and clear, distinct spaces. The rotated bar code will also have complete bars and clear distinct spaces. Although it may not look as good as a slightly overly dark bar code, it will be in spec. In both normal and rotated styles, small alphanumeric characters will look complete.

1. Load media (and ribbon if required) according to the appropriate Media Loading and Ribbon Loading Instructions found in the printer's User Guide. Insure the Print Method is appropriately characterized for either Direct Thermal or Thermal Transfer.
2. To print a label for evaluation, use the following procedure:

   A. With Power OFF, press and hold the FEED Key.

   B. Turn the Printer Power ON, then release the FEED Key.

   C. The printer will perform the Power ON Self Test (POST), calculate label length, and then begin printing test labels.
3. Print a label, then press the PAUSE Key. The label will contain two bar codes as well as other printer information. Normal bar codes are printed in a horizontal format as they feed out of the printer. Rotated bar codes are printed in a vertical format.
4. Compare the test label printed to the bar codes in Figure 8.2. If the test label appears overly light or overly dark, refer to section 5 and increase or decrease the Print Darkness setting.
5. Resume printing by pressing the PAUSE Key again. Print a few labels at the new setting and verify that proper IN SPEC Bar Codes are being printed. Repeat steps 3, 4, and 5 until satisfied.
6. To terminate the printing of the test labels, press the PAUSE Key then press the CANCEL Key.

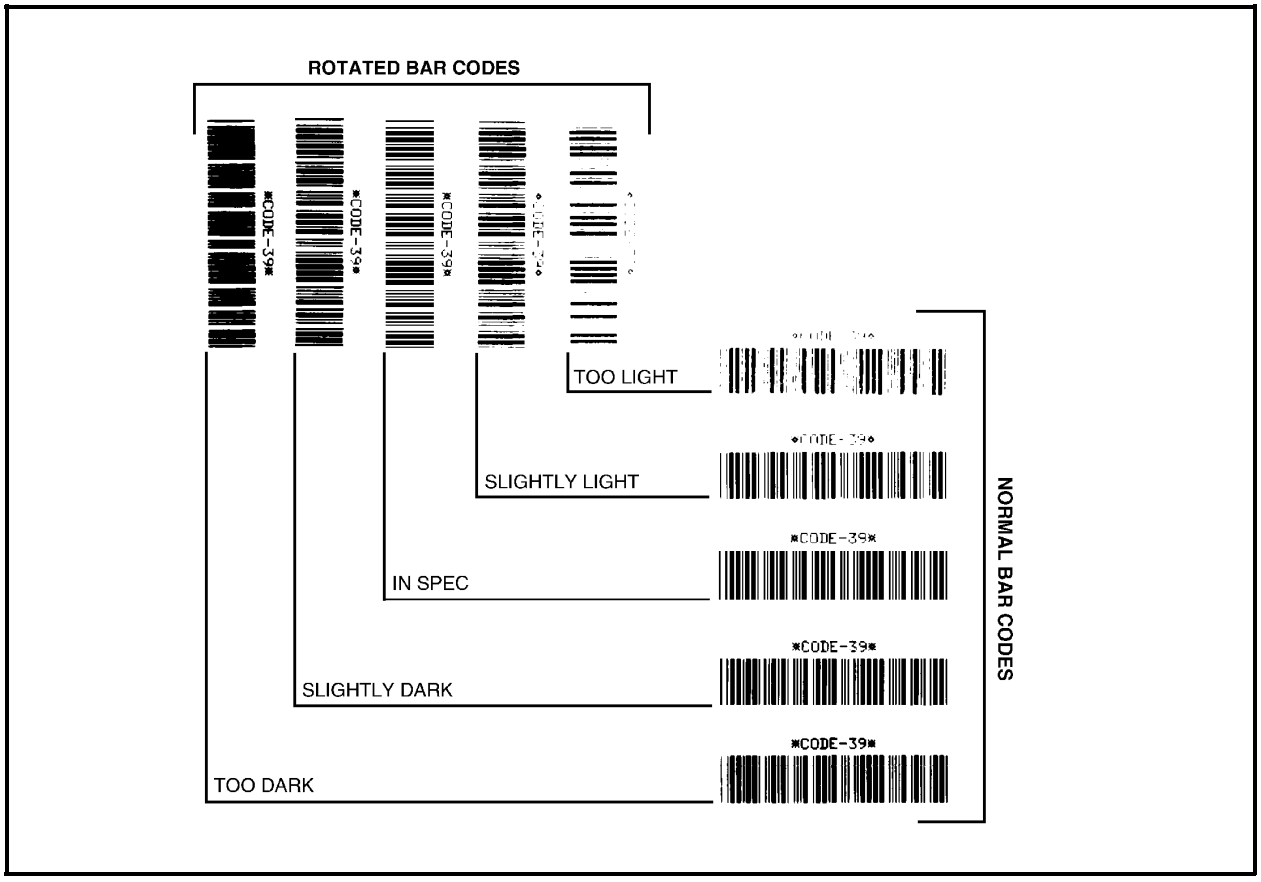

Figure 8.2 Setting Print Darkness